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AMERICAN ASSOCIATION

OF

Industrial Physicians and Surgeons

SECOND ANNUAL MEETING

NEW YORK CITY

June 4th, 1917

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CONSTITUTION AND BY-LAWS OF THE AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS.

ARTICLE I. NAME.

The name and title of this organization shall be, The American Association of Industrial Physicians and Surgeons.

ARTICLE II. OBJECT.

The object of this Association shall be to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employes; and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

ARTICLE III. MEMBERSHIP.

Section 1. Membership in this Association shall be of three classes: (a) active, (b) associate, (c) honorary. Only physicians who are actively engaged in the practice of industrial medicine and surgery, or who are engaged in the investigation of industrial medical problems, shall be eligible to active membership; other physicians shall be eligible to associate membership. Any person who has contributed distinguished service to the objects for which the Association stands shall be eligible to honorary membership.

Section 2. Associate and honorary members shall have all the privileges of active members except the privilege of holding office and of voting for officers and directors and for amendments to the constitution and by-laws.

Section 3. Applications for active or associate membership must be made in writing to the Secretary, and must be approved by two active members in good standing before election can take place; a two-thirds vote of all the members present at any executive session of the Association shall be required to elect to membership. Applications shall not be acted upon by the Association unless they have first been approved by a membership committee of three to be selected by the Board of Directors. Honorary members may be proposed to the Association by the Board of Directors; a two-thirds vote shall be required to elect.

Section 4. The annual dues of active and associate members shall be two dollars per year, and shall be payable in advance on the first day of January of each year. Honorary members shall pay no dues.

Section 5. Any member whose dues are unpaid is not in good standing, and he shall have no vote until his indebtedness is discharged. When the dues of any member become two years in arrears, his membership shall automatically cease.

Section 6. Members may be expelled for cause; provided, that a copy of the charges made against him shall be furnished to him in writing at least one week prior to the meeting at which such action is taken. A majority vote shall rule.

ARTICLE IV. OFFICERS.

Section 1. The officers of this Association shall be a President, a First Vice-President, a Second Vice-President, and a Secretary-Treasurer. They shall be elected by the Association and shall serve from the close of the annual meeting at which they are elected until the close of the next annual meeting, and until their successors are elected and installed.

Section 2. The President shall preside at all meetings of the Association and of the Board of Directors and shall perform such other duties as may be directed by the Board of Directors. In the absence of the President the Vice-President shall act in his place.

Section 3. The Secretary-Treasurer shall keep an accurate record of the transactions of all meetings of the Association and of the Board of Directors; shall carry on the correspondence of the Association; shall keep an accurate list of the members; shall receive all moneys belonging to the Association, giving his receipt therefor, and shall pay all just bills against the Association, subject to the approval of the Board of Directors; he shall submit his accounts for audit at the annual meeting, and shall transmit to his successor in office all the funds and properties of the Association remaining in his possession. He shall submit an annual report to the Association in such form as may be determined by the Board of Directors.

ARTICLE V. ADMINISTRATION.

Section 1. The affairs of the Association shall be administered by a Board of Directors consisting of the officers and twelve additional directors. The Association at its meeting in Detroit in 1916 shall elect six directors to serve one year, and six to serve two years.

and thereafter six directors shall be elected each year to serve for a term of two years. Their term of service shall begin at the end of the annual meeting at which they are elected.

Section 2. The planning of the work of the Association, arrangements for meetings and programs, and for other matters pertaining to the administration of its affairs, shall be vested in the Board of Directors, except as otherwise herein expressly provided. The President of the Association shall serve as Chairman of the Board. The Board shall make its own rules and shall appoint such committees for carrying out the work as it shall deem necessary and advisable.

Section 3. The Board of Directors shall have power to fill vacancies among the officers and directors to serve until the next annual meeting of the Association, or until their successors are chosen and installed.

Five directors shall constitute a quorum.

ARTICLE VI. MEETINGS.

Section 1. The annual meeting of the Association shall be held at the place of and during the week of the meeting of the American Medical Association, but the sessions shall be held at such hours as not to conflict with the sessions of the American Medical Association.

Twenty members shall constitute a quorum.

Section 2. Other meetings may be called by the Board of Directors.

Section 3. Notice of all meetings shall be sent to the members by the Secretary at least thirty days in advance of the date set for them.

ARTICLE VII. ELECTION OF OFFICERS.

Section 1. Nominations for officers and directors shall be made by a Nominating Committee of three active members to be appointed by the President at the first executive session of any annual meeting. Provided, this article shall not be construed to deprive any member of his right to make nominations.

Section 2. Election of officers shall take place at the last executive session of the annual meeting.

Section 3. In the event of there being competitive nominations for any office, election shall be by ballot, and a majority of all votes cast shall be required to elect. If after two ballots there shall be no election, all but the two candidates receiving the highest number of votes shall be dropped from the ballot and the voting confined to the two so designated.

ARTICLE VIII. AMENDMENTS.

This constitution and by-laws may be amended by a two-thirds vote of the members present and voting at any annual meeting of the Association; provided, that the call for such meeting shall have specified the particular amendment which is to be acted upon, and provided also that no amendment shall be acted upon which has not been so specified.

FOREWORD.

Your Secretary-Treasurer has been in the army since June 15th, and therefore has found it impossible to devote the necessary time to edit the minutes and papers of the second annual meeting and have them printed at an earlier date. He trusts that the Association will pardon the delay in getting out this most valuable contribution to medical science.

The war is rapidly developing many changes in the social and economic life of our nation. Among the greatest of these are the changes which are bound to take place in the industrial organizations of the country.

The great economic loss in man power which the world is sustaining as a result of the war is forcing every nation to salvage all disabled men and women and to train them to again become useful and efficient units of society.

In the office of the Surgeon General of the Army we are working out a comprehensive program for the reconstruction and rehabilitation of the disabled soldiers. This reconstruction of the disabled soldiers has become a national problem not only here but in all warring nations. The public is awakening to the possibilities of this work, and for the first time is talking familiarly of the conservation of human energy. As a result, it has at last awakened to the great waste of human energy, the results of accidents and disease, which has gone on since the birth of our nation. After the reconstructing, re-educating, and otherwise rehabilitating of our soldiers, the nation will naturally drift into the reconstructing and rehabilitating of all disabled men and women. Never again will we return to the old method of relegating our disabled to the scrap heap. Human conservation will be by far the greatest by-product of the war.

This reconstruction and rehabilitation work is the greatest specialty in medicine which has been developed by the war. Many in the medical profession are learning for the first time the various angles of this work, and are surprised to know that it is simply the practical application of industrial medicine and surgery, in its broadest sense, which we as industrial physicians have been practising for several years. The specialty of industrial medicine and surgery has at last come into its own.

Harry E. Mock,
Major, M. R. C.

MINUTES OF THE SECOND ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

Industrial Physicians and Surgeons

NEW YORK CITY, JUNE 4, 1917

(DR. J. W. SCHERESCHEWSKY, Chairman.)

CHAIRMAN: The meeting will please come to order. I am sure all of us are very sorry to learn our Secretary-Treasurer, Dr. Mock, who has played such an important part in the birth of this Association, is unable to be present because of illness in his family.

Therefore it is necessary for me to appoint a temporary Secretary during the regretted absence of Dr. Mock, and I name Dr. L. A. Shoudy, as Temporary Secretary of the Association, in the absence of Dr. Mock.

Since the meeting at which this Association was born, the most momentous event in our national history has taken place. No one doubts that our entire future hinges directly upon the manner we play our part in the great crisis which has been thrust upon us. Yet it has been reiterated that it is not the mere numbers of troops we may place in the trenches which will give effective weight to our participation, but our ability continuously to furnish in maximum quantity all the material upon which depends the prosecution of modern warfare.

We have all keenly felt in the past that the vital factor in industrial production was the health and welfare of the men and women who work. We have all felt that when once public opinion was moulded to the view that systematic conservation of the health of workers was a pure business proposition, and not a fad of vague humanitarianism, that then, and not until then, would industry be placed on that basis of the newer efficiency, which is no longer content with casting the worker, when outworn, upon the human industrial scrap heap, but sees to it that his health is so safeguarded and maintained that his life as a producing unit is prolonged to the maximum.

Yet though this has been our creed, we were perforce obliged under peaceful conditions to await the gradual acceptance of this conception, by the population as a whole, as an evolutionary process, the development of which we could aid only by such educational work as we were able to perform.

At the present time, however, the needs of the situation are imperative, for the preservation of the industrial forces of the country in a continuous state of health is the basic factor in maintaining our production of war and food supplies at their highest level over a long period of time. For let us not deceive ourselves. We are face to face with a prolonged and bitter struggle, which will strain our every energy to the uttermost in order to reach that goal to which we are striving, namely, the democratization of mankind. I need hardly remind you that industrial conditions in England, at the outset of the war furnish a striking illustration of the necessity of protecting the health of workers.

Factory legislation may be said to be a native of England. When war was declared, England had enacted many wise provisions for safeguarding the health of workers, and for the protection of women and children. She had enacted laws for sickness insurance. A long list of occupational diseases were compensable under accident compensation laws. Yet in the period of initial stress all of these precautions went more or less by the board. In the endeavor to secure unprecedented production these laws were relaxed, industry was generally speeded up to the breaking point, long hours and long periods of overtime were worked. In addition to this, in the first rush to enlist, thousands of skilled workers, of vital importance to war industries, went to the front, so that until these could be brought back again the posts of the workers were filled by previously unskilled volunteers who only broke down under the unfamiliar and strenuous conditions. It was inevitable that, in spite of all effort, production began to decline, that the guns at the front had often to remain silent for lack of supplies, that troops, eager to do their bit, had to await equipment.

So one of the first acts of the newly created Ministry of Munitions was the appointment of the now well known "Health of the Munitions Workers Committee," which resulted in the systematic return to intensive measures for the preservation of the health of workers. Who can doubt that it was this renewed solicitude which again enabled the English factories to bring their production to heights previously unattained, which aided in the accumulation of the vast quantity of stores of all kinds to supply the great spring offensive of this year?

It is clear, therefore, that this lesson should be taken very seriously to heart by this country; that the practical application of well known measures for protecting the health of the workers in the mobilized industries must be regarded as essential to the effective prosecution of the war.

While this subject is familiar to you all, may I be permitted here briefly to indicate the general lines which such activities should follow.

In the first place efforts must be directed towards the sanitation work place itself; particular attention must be paid to securing a sanitary factory environment; adequate illumination becomes a necessity when we consider the great frequency of night work. The prevention of air stagnation, important as it has always been, becomes doubly so, when we consider how essential it is now to keep every worker alert and refreshed during his hours of work. Special care will be required to provide adequate toilet and washing facilities, change rooms and locker rooms. Good food, too, for workers will be a prerequisite in maintaining health and producing ability at a maximum. This, together with the probable entry of large numbers of women into occupations to which they have hitherto been strangers, in this country at least, will require the establishment and sanitary maintenance of lunch rooms in the majority of the establishments.

We next come to the matter of medical supervision. I need hardly dilate upon its merits, so familiar to you all. I will, however, mention that under present conditions we will need all the man power available to industry. We should endeavor to utilize all who present themselves. This means then that for effective results we must pay closer attention than ever to the man in relation to his job; that we must see that men are so apportioned to the work in hand that each will be at his very best.

In addition to this, the body of workers must be carefully protected from the introduction of communicable diseases among the plant personnel. Part of the duties of medical supervision will be to see how the men are standing the work. This means re-examination at definite intervals of all workers who are exposed to industrial health hazards, especially those of overfatigue and occupational diseases.

With the great influx of new and untried workers, and the general spirit of hurry and tension which is bound to prevail, industrial accidents will be prevalent. Again there is need to prevent loss of time on the part of workers because of numerous minor ailments. Therefore we must make ample provision for the medical treatment in the plant not only of injuries, but of minor ailments as well. This means a general increase of hospital and dispensary facilities in plants and of the staff of assistants to plant physicians.

Many of the processes of industries in war time are fraught with danger of occupational poisonings and diseases. The medical supervision of plants must provide for the adoption of appropriate preventive measures and their effective enforcement.

Finally there is the important question of community sanitation. It will be of little avail to provide ideal conditions in the plant during hours of work, when during the remainder of the day the workers are exposed to the dangers arising from a defective community environment. This has always been true of industries. The present situation only emphasizes the importance of the relation borne by healthful community conditions to progressive industrial organization.

We see, therefore, that the time is now at hand for the industrial physician to come into his own. I can conceive of no work which will more immediately benefit the nation than to see that the effective mobilization of our industries is not handicapped by preventable disease and injury.

In the industrial physicians we have that body of men through which this high purpose must be accomplished. Not only are they in a position to render at once services of incalculable value to the nation, but the opportunity is presented, by their successful work, of placing industrial medicine and surgery on a foundation so permanent that the future holds every prospect of rapid and enduring advance to the goal to which we have been tending, namely, the removal of all preventable, harmful effects of industrial life. (Applause.)

Dr. J. P. Jones: Members of the American Association of Industrial Physicians and Surgeons, I think we, as an Association, are very much to be congratulated on the opportunity of listening to this far seeing and patriotic address of our President. Members of our profession have always been among the first to respond to any call that the country has made upon them. Eugene Field has well said, that Dr. Warren was the first to fall in our great cause, and Warren's name has won great fame. It has occurred to me that possibly Dr. Warren would have served his country better had he fought in his professional capacity instead of fighting carrying a musket at the Battle of Bunker Hill. Many of our surgeons have already enlisted in the service of the country,—some of them wisely, some of them, in my opinion, unwisely, because they could better serve the country in their capacity as industrial surgeons.

I would therefore like to offer the following resolution:

"*Whereas*, in this, the greatest crisis of our national history, industry must play a vital part, and,

"*Whereas*, maximum and continuous production depends, in the last analysis, on the health and safety of the workers, and

"*Whereas,* this Association is composed of those who are giving their whole time and attention to the very work of insuring the health and safety of workers, and are, therefore, peculiarly fitted to aid in the effective mobilization of the industrial resources of the country,

"*Be it Resolved,* that this Association, through its executive officers, tender its services to the President of the United States."

Dr. Francis D. Patterson: I rise to second the motion that has been made and I hope that this Resolution will be passed. It seems to me that the medical profession of this country should realize the crisis which confronts us. I am sure it needs no words of mine to try to make clear to an audience of medical men what the real situation is in Europe. There are over there millions of men engaged in fighting. And the demand upon this country for the production of munitions of every kind and description is going to transcend anything that has ever taken place in the history of the world. It is going to be an absolute necessity for this country to supply these munitions or this war is going to come to a most inglorious end as far as we are concerned, and it therefore seems to me peculiarly fitting that the President of these United States should take advantage of the skill of the men in industrial medicine, because in the final and last analysis this war is going to be won by the men in the workshops of America in producing the necessary munitions to supply ourselves and our Allies. I therefore take pleasure in seconding this motion, made by Dr. Jones.

Chairman: Gentlemen, you have heard this resolution and the second which has been made. In my opinion, I believe that the paths of activity of this Association lie clearly before you. I will ask if there is any discussion on this resolution, before we put it to a vote. If there is none, I will ask that those in favor of tendering the services of this Association to the President of the United States, signify their approval by saying "aye." (Unanimous response of "aye.")

Chairman: I don't think I will ask if anybody is opposed to it.

We will hear the reports from the Committees. The first will be the report of the Committee on Health Insurance.

Dr. T. R. Crowder: Your Committee on Health Insurance has made a study of the measures introduced into several state legislatures for the establishment of health insurance systems in the several states. It has considered much of the evidence for and against such measures.

Your Committee believes that the principle of health insurance which makes proper provision for the prevention of sickness as well as proper provision for the relief of sickness is a sound one, and that any insurance laws designed to meet the one demand should give full recognition to the other; in other words, that health preservation should be recognized as an important feature of the program. But at this time there is apparently much uncertainty as to whether this has been accomplished by the measures proposed. The Committee believes that definite recommendations concerning the enactment of any measure into law should be deferred, until it is clearly determined that such a law makes proper provisions for both the relief and prevention of sickness, or until it is clearly determined that the method proposed is that which is best designed to improve the health of the worker as well as to provide for his relief in time of illness.

It is not at all clear that the compulsory sickness insurance laws now being proposed meet the conditions outlined. Your Committee, therefore, recommends that further time be given for the consideration of the whole subject.

The discussion of the subject aroused by the proposals that have been made has been valuable in that it has emphasized the shortcomings of our methods of medical practice. It has indicated that both public health and private health practice must be improved, adequate public health machinery set up, the group practice for refinement of diagnosis extended, the medical care and supervision of employees made more general, and finally, child life more adequately protected by extending medical supervision to it. These are measures directed chiefly to the prevention of disease; and in view of the important part the medical profession is to play in any such scheme adopted, it should take an active part in the discussion.

In the meantime it would appear proper for the American Association of Industrial Physicians and Surgeons to aid in the study of the subject of Health Insurance.

The very nature of the work of the members of this Association should make it especially fitted to undertake that part of the investigation required to arrive at an approximate estimate of the sickness expectancy among the industrial population. In fact, many establishments by which members of this association are employed have already accumulated records of great value to such a study. In those establishments where employees' sick benefit funds are in operation there are records of all sickness for which compensation is paid. In many establishments, records of all absenteeism on account of sickness are kept.

If these records could be made available for this study, and the necessary changes made in the forms of the records so as to secure uniformity, a central office or clearing house could be established to bring them together for tabulation, analysis, and publication. In this way, all would have the benefit of the experience of these establishments. To facilitate the collection of these records it is understood that the United States Public Health Service is willing to act as a central office or clearing house, provided the establishments are willing to co-operate by adopting a uniform system of records and furnishing such simple monthly reports as may be recommended by this association.

In order to work out some feasible plan for collecting these statistics your Committee recommends that a Committee be appointed to consider this matter in co-operation with the United States Public Health Service.

CHAIRMAN: You have heard this report, gentlemen; what is your pleasure?

DR. PATTERSON: I move that the report be accepted. (Seconded.)

CHAIRMAN: All those in favor of accepting the report, will signify their approval by saying "aye." (Unanimous response of "aye.")

DR. PATTERSON: I also move that this Committee be continued, to report next year. (Seconded.)

CHAIRMAN: It has been moved and seconded that this Committee on this important subject be continued, to report at the next annual meeting. In connection with this, I may say that this report contains the very valuable suggestion that a Committee be formed to consider the practicable methods for the collection of these necessary morbidity statistics. The Chair might suggest that the present Committee be continued for that work for the ensuing year, on the problem of adopting uniform methods for the collection of these very necessary statistics and looking towards the establishment of a central clearing house. Is there further discussion?

DR. B. S. WARREN: The question I arise to is as to the practicability of obtaining these records. I wish to ask the opinion of the Association as to whether they think that this plan is practicable, insofar as their own knowledge in their own industry goes—whether this could be done, and whether they stand ready to co-operate with this Committee in making such changes in their records as will make them uniform for publication. In my study for the Public Health Service, I feel sure that the Service, if called upon, will act as a clearing house if these records could be made uniform, and will publish them every month in the U. S. Public Health Reports, if it is agreeable to this Association. I would like to obtain the sense of this Association, and ask for some discussion on the practicability of collecting such records, and how far the Association is ready and willing to go into this matter.

CHAIRMAN: I think Dr. Warren has brought up a very important point for discussion. Of course, before a committee undertakes this work it will be wise to have some assurance that such work may be fruitful in results. I will therefore ask the members of the Association to endeavor to answer the query that Dr. Warren put—what you believe the practicability of obtaining this information is.

DR. W. H. WHITE: It seems to me that one very practical thing to do would be a co-operation between the Industrial Association Committee and the Industrial Commissions or Committees of other states, especially the legislative Industrial Committees which were appointed during the last year to investigate the subject of health insurance in the different states and to have a conference some time prior to January 1, 1919, so that there may be a uniformity in the reports submitted to the different states on this subject.

The Industrial Committee could be of great value to our Committee in Ohio which was appointed by the Governor. We need all the co-operation that can be secured by this Association in the compilation of records sufficient to secure a good report.

DR. FRANK E. SCHUBMEHL: Dr. Lauffer has done a great deal of work on this question of statistics, and I think that his work along those lines will save much time and trouble, and that he should be included on the Committee.

DR. CHARLES A. LAUFFER: My experience with statistics has been limited. As a member of the committee of the Conference Board of Physicians, I have investigated standard record cards for tabulating machines. If the tabulating cards are standardized, there will be a fair basis of comparison, as well as a ready means available for securing definite data for statistical studies.

Three cards are desirable, one for Industrial Accidents, containing at least sixteen items of information; one for Sickness Disability, containing at least ten items; and a third card for collecting relief dues, where a beneficial organization is conducted.

Six codes are required, so that code numerals may be punched in the tabulating spaces of the cards: (1) a table of occupations, (2) a table of anatomical divisions of the body, (3) nature of injury, (4) causes of accidents, (5) list of diseases, and (6) classification of causes of death.

The federal and state bureaus, as well as the insurance companies, have tabulated these facts, and introduced diverse numerical codes for their own purposes, but the industries have not conducted such statistical studies. As many firms have tabulating machines in use in their cost and sales departments, it remains for their medical departments to formulate cards and punch them, then utilize the tabulating machines to assort the cards, presenting the data of their surgical and medical cases. The tabulating machines add, as well as assort.

It is instructive to know the ratio of eye injuries, and of finger injuries, of any anatomical division. Likewise, the number of burns, lacerations, fractures, and other types of injuries. Similarly, the ratio of accidents among men but a short time in the service, as compared with seasoned employees. The statistical possibilities of the tabulating machines are manifold.

Yet if each industry pursues its own method, and adopts its own numerical codes, regardless of state, federal, and life insurance experience, the proper status of, and recognition for this work will not be attained.

The co-operation of this organization with the efforts now being exerted by the federal bureaus, under Dr. Royal Meeker, to co-ordinate and systematize existing codes, would certainly be a step in the right direction.

DR. PATTERSON: I wish to state that in Pennsylvania, we have analyzed the industrial accidents and disability accidents, and we would be very glad indeed to place these at the disposal of Dr. Warren, if he would care to have them for publication in his reports.

CHAIRMAN: Of course the one thing necessary is the compilation of morbidity—whether the accident is wholly covered by the compensation laws, doesn't affect us—the question before us is to determine the prevalence so far as possible of sickness in industry, the nature of the sickness, and the distribution according to industries. Therefore, the statistics which the committee would like to get are the statistics relating to morbidity.

Dr. Lauffer has evidently done a great deal of work in this matter of statistics. The motion which is now before the Association is to re-elect this Committee to continue its work during the coming year, and the Chair will entertain a motion to amend the motion, to add to it, and to include Dr. Lauffer.

DR. PATTERSON: I make that motion.

CHAIRMAN: That the Committee be reappointed for the coming year, and to add to that Committee Dr. Lauffer. (Seconded.)

CHAIRMAN: All those in favor of the motion will signify their approval by saying "aye." (Unanimous response of "aye.")

CHAIRMAN: The object of the committee being especially to devise methods so that this Association may co-operate in obtaining records of morbidity in industries.

DR. CROWDER: Inasmuch as the Committee has six members, I think it would be well to drop, say two of the members of this committee.

CHAIRMAN: It hardly seems to me the province of the Association to make the invidious distinction of dropping members from the Committee. They all seem to be valuable. The fact that it consists of six members does not do anything but increase its efficiency, and I believe that an additional member will add to this.

I will next call for the report of the Committee on Standardization. (There was no report from this Committee.)

CHAIRMAN: I will call for the report of the Committee on Journal.

DR. OTTO P. GEIER: Mr. Chairman and gentlemen, the Committee on publication believe that the proceedings of our annual conferences and the reports of our committees should be given wider publicity than is possible through the limited distribution to our membership of these proceedings. The Committee recommends therefore that the Association empower our President to appoint a Publication Committee, and that that Committee be instructed to enter into arrangement with some suitable journal for the publication of these proceedings and such other data as its publication committee may furnish it from time to time.

With this recommendation, the Committee asks for its discharge.

DR. PATTERSON: I move the adoption of the report, and the appointment of such Committee. (Seconded.)

CHAIRMAN: All those in favor of the adoption of the report and the appointment of a Committee on Publication, will signify their approval by saying "aye." (Unanimous response of "aye.")

CHAIRMAN: The Chair will therefore appoint a Committee on Publication.

We will now have the report of the Committee on Prize.

DR. PATTERSON: At last year's meeting in Detroit it was announced that there would be awarded a prize of $100, to be given for the best thesis written by an undergraduate medical student on some subject connected with medicine and surgery that the Board of Directors of the Association might decide, and that a Committee be appointed as a prize committee composed of persons best suited to award the prize, and to reward the successful candidate at the next annual meeting of the Association.

In pursuance of the decision of this association to accept the offer of this prize, to be given annually by one of the members of our Association, a Committee of three members was appointed to consider the prize, consisting of Dr. Alfred Stengel, Professor at the University of Pennsylvania, Dr. Alice Hamilton, of the United States Bureau of Labor Statistics, and myself.

And your Committee has had the privilege of receiving seven theses from undergraduate medical students which had been submitted in the competition for the prize offered by this Association.

It is our feeling that the Association and Committee are to be congratulated upon the general excellence of these papers, four of which appear to the Committee to represent the most unusual grasp of the subject upon which they were written.

The subjects of the theses and their writers are:

(1) Wound Infection Among Lathe Workers, by Marvin D. Shie, A. B., Student in Medicine, Class 1918, Western Reserve University.

(2) Some Forms of Occupational Dermatoses found among Munition Workers, by A. Moncrieff Carr, of Westgrove, Pa.

(3) Medical Supervision of Industry, by Carl E. Roser, Ann Arbor, Mich.

(4) The Advantages and Disadvantages of Industrial Medicine to the Employee, by Ernest C. McGill, Chicago, Ill.

(5) Industrial Medicine as a Foundation for Social Welfare, by M. Gertrude Slaughter, of Chicago, Ill.

(6) An Investigation of the Relation of Industry to the Physically Impaired Employee and Applicant for Employment, by George A. Gray, Rush Medical College, Chicago, Ill.

(7) Industrial Surgical and Medical Service, by A. A. Newbauer, of Detroit, Michigan.

Your committee has the honor to report that it has unanimously decided to award the prize to the thesis upon the subject of "Wound Infection Among Lathe Workers," by Marvine D. Shie, and to give honorable mention to the thesis by A. Moncrieff Carr upon "Some Forms of Occupational Dermatoses Found Among Munition Workers."

I wish to state that this money has been set aside for awarding this prize annually, and we hope next year to have even more theses; and I can say for the benefit of those present that I don't think we could have better theses than the four first mentioned, and they deserve the greatest credit, as they represent the very highest type of intensive medical research.

We are going to recommend that the successful thesis be incorporated in the proceedings of our meeting, and we will also endeavor to have same published in the Journal of the American Medical Association.

Dr. White: I move that the report of this Committee be accepted, and the committee continued. (Seconded.)

Chairman: The motion is that this report be accepted, and the Committee continued. Before putting this question to a vote, I wish to say that this Association should be greatly congratulated upon the splendid spirit shown by Dr. Patterson in this work. I believe the results of this thing will show that this is an admirable method for bringing to the attention of medical students the great importance of industrial medicine and surgery. There is no question of its stimulating effect towards much research on the part of the medical student, and it will probably definitely influence the trend of their future activities.

Those in favor of accepting and approving this report and continuing this Committee for the ensuing year, will signify their approval by saying "aye." (Unanimous response of "aye.")

Dr. Geier: May we refer the other three essays to the Committee on Publication, for publication, if they deem it wise? I put that as a motion. (Seconded.)

Chairman: It has been moved and seconded that the other three essays be referred to the Committee on Publication for consideration and subsequent publication, if the Committee deems them worthy of it.

Dr. Crowder: I would suggest that the Committee which is to consider the propriety of publishing these theses be the same Committee which has considered them originally. They have done a great deal of valuable work and it seems to me they should use their judgment on that.

Dr. Geier: That is, to leave it to them. That is all right. I will withdraw my motion, and leave it stand with the present Committee. (So carried.)

Chairman: We will now come to the Treasurer's Report. Dr. Mock is not here, and I will ask the Temporary Secretary to read the Treasurer's Report.

Dr. Shoudy: The financial statement as submitted by Dr. Mock shows, from May 1st, 1916, to June 2nd, 1917, total cash receipts of $752.94, total expenditures of $736.32, bills unpaid $2.00; balance on hand $14.62.

Dr. Patterson: I move that the report be accepted. (Seconded.)

Chairman: It has been moved and seconded that the report of the Secretary and Treasurer be accepted. Is there any discussion? If not, all those in favor of accepting the report signify their approval by saying "aye." (Unanimous response of "aye.")

Chairman: We now come to the appointment of Committees.

We will select a Nominating Committee for the nomination of officers, with the understanding, of course, that nominations which are reported by this Committee may be added to by the floor when the report is received. The Chair therefore names the following Committee: Dr. D. B. Lowe, Dr. Charles A. Lauffer, and Dr. Charles H. Pike, to serve as a Nominating Committee.

CHAIRMAN: There was a meeting of the Board of Directors last night, to consider some small but apparently necessary changes in the Bylaws; and I will ask Dr. Geier to report to the Association the recommendations of the Board of Directors with regard to this matter.

DR. GEIER: In the absence of Dr. Mock I acted as Temporary Chairman. The meeting was held on Sunday, June 3rd, 1917. The Board recommends to the Association that Article 3, Section 4, of the Constitution be amended to read, that the dues shall be payable in advance on the 1st day of May instead of January 1st, as at present.

Shall we act on these, Mr. Chairman?

CHAIRMAN: I think we had better act on them as they are read.

DR. GEIER: I move the adoption of this recommendation. (Seconded.)

CHAIRMAN: All those in favor of the adoption of this recommendation will signify their approval by saying "aye." (Unanimous response of "aye.")

DR. GEIER: The Board of Directors further recommends that the Bylaws and the Constitution be amended to read as follows:

"Each member of the Board of Directors shall be notified in writing at least two weeks in advance, as to time, place and purpose of meeting by the Secretary."

I move the adoption thereof. (Seconded.)

CHAIRMAN: All those in favor, will signify their approval by saying "aye." (Unanimous response of "aye.")

DR. GEIER: Proposals for Honorary Membership shall be handed to the Secretary and recommended to the Association by the Board. (Seconded.)

CHAIRMAN: All those in favor, will signify their approval by saying "aye." (Unanimous response of "aye.")

DR. GEIER: All resolutions shall be referred to the appropriate Committee for recommendation before reference to the general body. (Seconded.)

CHAIRMAN: All those in favor, will signify their approval by saying "aye." (Unanimous response of "aye.")

DR. CROWDER: Our Bylaws and Constitution provide the manner in which amendments shall be had; that all proposed changes shall be submitted to meeting in writing in advance to their being voted upon. Therefore, all this Committee can do, in accordance with our present Constitution, is to propose that at a subsequent meeting these amendments shall be voted upon.

CHAIRMAN: That is right.

DR. CROWDER: I therefore move that the recommendations for change be submitted to the members and called for at the next meeting, that they may be voted on at that time. I make the motion to reconsider the previous motions. (Seconded.)

CHAIRMAN: As a matter of fact, none of those votes are legal, for the simple reason it is in conflict with the Constitution, and, therefore, as a matter of fact, these motions are out of order, and the only motion before the body at this time is Dr. Crowder's motion.

The motion therefore is, that the report of the Board of Directors be accepted and that these proposed changes in the Bylaws and Constitution be brought up for enactment before the next annual meeting of the Association.

Is there any discussion?

If not, all those in favor of this motion will signify their approval by saying "aye." (Unanimous response of "aye.")

CHAIRMAN: The Chair forgot, in appointing Committees, to make the appointment of an Auditing Committee. The Chair will therefore appoint an Auditing Committee of: Dr. Crowder, Dr. Post and Dr. Harvey to audit the books of the Association.

Is there any further business?

DR. PATTERSON: Mr. President, and members of this Association; there are two things I would like to submit to the Association. At our meeting last year, in Detroit, this Association elected, and had the honor conferred upon it of receiving acceptances from four persons, who became Honorary Members of our Association. They are, Dr. Joseph C. Bloodgood, of Johns Hopkins University, Dr. Sir Thomas Oliver, Newcastle-upon-Tyne, England, S. S. Marquis, D. D., of the Ford Motor Company, and Dr. Alfred Stengel, of the University of Pennsylvania, at Philadelphia.

Last night, at the meeting of your Board of Directors, the subject of additional Honorary Membership of this Association was discussed. The Board at that time reached what I hope the members will believe to be the very wise conclusion that this Association should not bestow Honorary Membership upon a large number of people, but that the honor of Honorary Membership in this Association should be kept for those who by some signal service in the field of Industrial Medicine have well merited the honor.

Your Board considered the names that were submitted to it, and we decided that at this meeting we would recommend to the members of the Association the conference of Honorary Membership upon one person.

Some years ago the United States Government started to investigate a large number of the industries, as to their effect upon those who were employed therein, and with rare wisdom it chose Dr. Alice Hamilton, to go forth into the field of industry, as a representative of the government, in order to see just exactly what work was being done. The first thing that she studied was what was considered by those engaged in it to be the holy of holies—the lead industry of this country; and before the gate of every factory practically there was a notice for everybody to keep out; that the processes therein represented secret processes and skilled work, and they did not invite any discussion upon the part of the government or anyone else.

To this work, assigned to her by the Government, Dr. Hamilton brought unusual tact and the charm which is the dominant note of her sex. She came into these industries and she made friends with all who were engaged therein. She showed that she had come into a plant not for the purpose of offering destructive criticism, or of carrying tales from one plant to another, but rather that she had come in to give the benefit of her wise brain to the management, so that life in the poisonous trades might be made materially more safe; and so, after she finished her work in this industry she left behind her the confidence of every man, be he employer or employee, engaged in it. She turned her attention to a long line of industrial pursuits, in each one of which her construction has been most helpful to the management of the particular industry.

And I, Mr. President, on behalf of your Board of Directors, have the honor to name to this Association, for Honorary Membership, Dr. Alice Hamilton, of the United States Bureau of Labor Statistics. (Applause.)

Dr. Crowder: I second the nomination.

Chairman: You have heard the nomination of Dr. Alice Hamilton as an Honorary Member of the Association of Industrial Physicians and Surgeons. The Constitution of this body states that persons who have been conspicuous in the field of Industrial research may be elected as Honorary Members. I believe that Dr. Hamilton by her labors has eminently earned this honor. Is there any discussion upon this motion? If not, I will put the question. All those in favor of the election of Dr. Alice Hamilton as Honorary Member of the American Association of Industrial Physicians and Surgeons, will signify their approval by saying "aye." (Unanimous response of "aye.")

Chairman: It is so recorded.

Dr. Patterson: I have one other matter of new business, and that is this: I believe that an essential part of the future work of our Association is going to depend upon the establishment by the Association of local Councils within the States. We meet once a year, but it doesn't seem to me it is quite enough, and with these local councils frequent meetings can be had. I believe that in union there is strength; that we can organize throughout the industrial States of this Union the body of Industrial Surgeons into a fine, strong mass, which will all come into our National Association as members.

I therefore move you, sir, that authority be given to men in the individual States to form local Associations, or local Councils, subsidiaries of this National Association, and upon behalf of more than five hundred industrial physicians of the Commonwealth of Pennsylvania, all of whom will become members of this Association, I have the honor to apply for Charter Number 1. (Applause.)

Dr. George M. Price: I second that, for the simple reason it is an absolute necessity in our organization. I know I have asked the Secretary some time ago how many members of this Association were in New York City, and he sent me a list of six. I know a great many more industrial physicians in New York City than six, and those industrial physicians ought to become members.

New York City ought to have the second Charter, seeing that Dr. Patterson has applied for Number 1.

Dr. C. C. Burlingame: We have an original organization and have had three meetings, in New England. It seems to me quite unwise to duplicate effort and keep on organizing a little society here and a little society there, when associations already existing may be given an opportunity of becoming a component part of this greater Association. And as an organized body we apply for Number 1.

Dr. Crowder: I wonder if it has occurred to us that in order for us to grant charters it will be necessary to include in our Constitution and Bylaws power that this be done.

I am thoroughly in sympathy with Dr. Patterson in his purpose, and would like to propose Illinois for Charter Number 2, but somebody should take it upon himself to propose an amendment of the Bylaws or Constitution to cover that.

Dr. Patterson: I will withdraw my motion at this time, and accept Dr. Crowder's suggestion. We will call a meeting of the Board before this afternoon's session, so this may be brought up for consideration later, in the afternoon.

Dr. W. S. White: The idea is, we don't want to wait another year, to give us authority, if we can do it under the present Bylaws this year. Mr. President, Illinois three months ago organized a Committee to work under the Constitution and Bylaws of this body. Dr. Mock was expected to bring it up at this meeting. I speak of that to show that our organization was to act under this body.

Chairman: The question is, whether this point requires an amendment of the Constitution.

Dr. Crowder: The Board of Directors has a plan whereby this could be put into operation immediately, and I therefore propose and move that this body recommend this question to the Board of Directors, to work out a plan, and to put it into operation, whereby we may organize local councils in the States.

Dr. Patterson: I second the motion.

Chairman: It has been moved and seconded, that the matter be submitted to the Board of Directors, to work out a plan of operation, by which the formation of local Associations in the various States may be effected.

Dr. Burlingame: Does that go through by States? Or is it possible to make this by locality—State or locality?

Chairman: Yes. Of course where one State is only large enough to consider one local Association, why, therefore only the State would be considered. All those in favor of this motion will signify their approval by saying "aye." (Unanimous response of "aye.")

Dr. Geier: May I make the suggestion to instruct the Secretary to invite the corporations to our annual meetings, and to urge upon them to see to it that their physicians attend? The Board feels we would have an attendance two, three or four times the present attendance if the attention of the corporations were brought to our meetings. I move that as a recommendation. (Seconded.)

Chairman: That seems to me to be a very valuable suggestion. Is there any discussion? If not, those in favor will signify their approval by saying "aye." (Unanimous response of "aye.")

Chairman: Is there any further business?

Dr. Lowe: Has there been any attempt made to have a list of industries that employ Industrial Physicians?

Chairman: Dr. Patterson has such a list.

I will now call on the Nominating Committee for the nomination of officers.

Dr. Lauffer: The Nominating Committee has not had enough time to go into this subject, and wish to report this afternoon, if possible.

Chairman: I will call for the report, then, this afternoon.

Is there any further business? (No response.)

Chairman: If there is nothing further, a motion to adjourn is in order.

(It was so moved, seconded and carried, and the meeting adjourned until 2 P. M. this June 4th, 1917, same place.)

AFTER RECESS.

June 4th, 1917, 2 P. M.

CHAIRMAN: Before proceeding with the regular program, we have some unfinished business from this morning's session to dispose of, and that is, the report of the Nominating Committee.

I will, therefore, call on the Nominating Committee, through its Chairman, Dr. Lowe, who will make its report.

DR. LOWE: Mr. Chairman, and gentlemen of the Association. We have gone over this matter very thoroughly, and feel that the present officers of the Association should be returned for the succeeding year:

Dr. J. W. Schereschewsky, President;

Dr. Francis D. Patterson, 1st Vice President;

Dr. Robert T. Legge, 2nd Vice President.

Dr. Harry E. Mock, Secretary-Treasurer.

And the Directors.

CHAIRMAN: You have heard the report of the Nominating Committee, gentlemen. What is your pleasure?

DR. JONES: I move that the Secretary be empowered to cast one ballot for the election of these officers and directors. (Seconded.)

CHAIRMAN: Nominations closed, and the motion is that the Secretary be directed to cast one ballot for the members of this Association for the members who have been nominated. All those in favor of the motion will signify their approval by saying "aye." (Unanimous response of "aye.")

DR. SHOUDY: Mr. President, the vote is so recorded.

DR. LAUFFER: I wish to make the following motion, so that the matter may be brought before the Society. It has been objected to that some of the officers and directors during the past year have been inactive, and that there should be local associations formed in their respective districts. For that reason the directors have been given a wide geographical distribution. We would therefore propose that any director or official who fails to effect a local association before January 1st, 1918, tender his resignation to the Executive Committee of the A. A. of I. P. & S. (Seconded.)

CHAIRMAN: Is there any discussion on this?

DR. JONES: The By-law as adopted this morning, I believe contemplated the authorization of Associations within State limits or localities, as, for instance, the New England States. I believe that would answer the question of inability to form an organization in his immediate State. He might be able to in a locality, comprising two or three States. I would recommend that the Directors be requested urgently to do everything in their power to form local societies in their territory.

Dr. Cronin: I think that is rather hard on the Directors. I think we all ought to take similar interest, to try to get new members in.

Chairman: I think it is a matter placed entirely on the Directors, but after all, the members should have the interests of this Association so thoroughly at heart that all of them should make efforts to bring about local associations.

I might say that this was discussed at a meeting of the Board of Directors held immediately after this morning's session, and the Secretary now has a report from the Board of Directors which takes care of this very point.

Is there further discussion? If not, are you ready for the question?

(Response of "yes".)

Chairman: All those in favor of the motion to make it a prerequisite of holding office of director or officer, that such director or officer of this Association is obligated, under penalty of tendering his resignation, to effect a local association or Council—by the way, there is one point I ought to make before putting this to the vote: that apparently, this would require an amendment of the Constitution too. In other words, the duties of the Directors and officers are clearly defined by the Constitution, and I don't believe additional duties on the Directors and officers can be placed upon them except by an amendment of the Constitution. I think therefore that Dr. Lauffer's motion might well be made the—

Dr. Lauffer: Motion withdrawn.

Chairman: I will ask the Secretary to read the report from the meeting of the Board of Directors, with regard to the formation of local societies or councils.

Dr. Shoudy: "The Board of Directors, meeting June 4th, 1917, recommend the following bylaw and amendment to the Constitution: 'That the Secretary be empowered to establish State or District branches of the Association.' "

Dr. Crowder: I move its adoption. (Seconded.)

Chairman: It has been moved and seconded, that the Secretary be empowered to take the necessary steps for the establishment of local or district branches of the Association. I may say that from a legal standpoint such a step as this is really an amendment to the Constitution, and therefore should be acted upon at the forthcoming meeting of the Association, in regular fashion. Nevertheless it is pleaded that such action will redound so greatly to the development and benefit of the Association that the necessary steps may well be undertaken in advance of the legalization by amendment to the Constitution.

Is there any discussion on this motion?

Dr. Cronin: Mr. President, in taking over small societies—there was one society spoken of this morning; the New England Conference limits its members to men who are full time physicians,—men spending full time in industrial work. If this Society is going to consider taking over that society, the New England Board will have to open its doors and allow men who are really interested in industrial work, whether full time or part time industrial physicians, to go into it.

Chairman: One would hardly see any essential objection to that.

Dr. Burlingame: I am chairman of that Conference. This is hardly a fair criticism of that organization, inasmuch as we have had three meetings and are merely trying to find out which lines to draw. We want men of common interest—not someone who happens to have an office near a plant and happens to have a sore finger case sent to him. It is a hard thing to say just what entitles a man to membership. If we become a part of this parent association, that would all be settled—the standard of membership of this Association would be the standard for all of them.

Chairman: That is the reason why local Associations should be established.

I will ask all those in favor of having the Secretary of this Association take steps towards the organization of such local organizations, to say "aye." (Unanimous response of "aye.")

Chairman: The Chair will also entertain a motion,—I believe that it ought to entertain the motion, that this report of the Board of Directors be adopted with a view of having it incorporated in the Bylaws and Constitution of this Association at the next annual meeting.

Dr. Patterson: Mr. Chairman, I move that this be done.

(Seconded.)

Chairman: It is moved and seconded that this report of the Board of Directors be incorporated as an amendment to the Constitution for the next annual meeting. Is there any discussion? If not, all those in favor of this motion, signify their approval by saying "aye." (Unanimous response of "aye.")

Chairman: This I believe concludes all unfinished business which rests before the body.

I am informed by Dr. Mock that we have lost by death one of our charter members, Dr. Robert S. Denney, of Aurora, Illinois, and it is thought that it would be only fitting for this Association to frame resolutions in regard to his death.

I will therefore appoint a Committee to frame such resolutions; and I ask any gentlemen present who were personally acquainted with Dr. Denney to make themselves known, so that I may appoint them on that Committee.

This ought not to be an act of the Chair—the Association should, I believe, signify its attitude, and therefore the Chair will entertain a motion to the effect that the Chair be authorized to appoint a Committee to frame resolutions covering the case.

Dr. Jones: I move that the Chair appoint a Committee of three to draw up resolutions with reference to the death of Dr. Denney.

(Seconded.)

Chairman: Is there any discussion? All those in favor of this motion will signify their approval by saying "aye." (Unanimous response of "aye.")

Chairman: It is so recorded. The Chair will appoint:

Dr. W. S. White, Dr. H. P. Hourigan, and Dr. Randall Zimmerman, to prepare these resolutions.

We will now proceed with our regular program.

The first paper that we have is, "The Application of our Knowledge of Industrial Surgery to Military Surgery, Especially in Relation to First Aid."

Dr. Bloodgood needs no introduction to you. We all know Industrial Surgery and its manifold needs in the human body and problems which this brings forth in regard to the preservation of life and health is intimately related to military surgery. I know nobody who is better adapted by his qualifications and the work which he has done to adequately bring this subject before us.

Gentlemen, it is my great pleasure to present to you Dr. Joseph C. Bloodgood. (Applause.)

Dr. Bloodgood: Ladies and gentlemen, my chief reason for taking this title, or accepting this title that was given to me by your Secretary, was not so much that I really had anything new to offer you, but it was more the hope to stimulate you to give us what you have to offer, of the application of your knowledge of industrial surgery to military surgery.

The only group of surgeons in civil life who have a large experience with accidents, with any experience in first aid, and—to go further—with the largest experience in the preservation of health of a large number of people—is your own group.

The military surgeons of our Army have a great deal of experience with Sanitation; but it is relatively a small group of men compared to yours.

Now, how much actual knowledge you can give us in regard to first aid, I do not know, but what you have we need.

Dr. Rucker, of the Public Health Service, the Secretary of the Committee on Standardization—I think you all must have heard of him—tells me he has 2,800 replies, so that he has a certain amount of knowledge, in fact; just what he knows I do not know.

Before taking up the discussion, I have here, published in 1916, a little book on First Aid for the Trenches. Now this little book contains what the military surgeons of the British Army have felt from their experience of a little more than a year, almost two years, should be taught to soldiers; and I am sorry we didn't have a lantern so I could show some of the pictures; but here we have a very good and the most recent expression of opinion of the views of military surgeons after some experience in the war, of what should be taught a soldier. And I think it is a book you all should read.

I may start this discussion by giving you a short description of what is trying to be done in regard to the education of the men who will be called into service in the Army. We are going to publish a series of books of that size—the best we can get—of what is known in regard to medical military science. There will be pocket manuals of the same size, very much like that wonderful edition of Shakespeare, so that men can read or will be given an opportunity to read the most available and best things.

I am glad to say that the first volume has been written by a member of our Army, and is on the examination of the recruit and camp sanitation. And the more important things can be easily placed in this little book.

We have available a new series from the French Army, which is being rapidly translated. We have a book by Carrel on the Carrel-Dakin method,—surgery on the head and abdomen, but we have no first class book on first aid as yet, unless this will do. It is surprising how difficult it is to get any accurate information in regard to the actual results of first aid on the firing line, or in regard to what is best to be done in what the Army calls the "Zone of Advance," the zone between the firing line and the base hospital: that is, what is the best method of treating a wound with the material and time that you have in the various situations between the firing line and the base hospital; what is the best splint for fixing a fracture; and what is the best method of transportation.

If you read the English surgeons it is a compromise between salt solution and carbolic acid: if you read the French surgeons it is iodine.

Now, what we want to know from the industries is what in your experience is worth while teaching the ordinary laborer in regard to the dressing of the wound, the fixation of a fracture, and the method of transporting an injured man, with the available material at hand.

You will find in this book that they instruct soldiers how to check hemorrhage. Have you, in your experience as industrial surgeons, felt that lives have been saved by instructing your laborers, who are like our soldiers, how to check hemorrhage? Is it worth while? Now, there is a great question! I have had 800 answers, and I cannot tell you whether it is worth while. I am not asking what a surgeon would do. I am asking whether in your experience it is worth while to teach the layman how to check hemorrhages. That is one of the most important things. Of course you can tell him whether he should give the patient alcohol or not, but in this book it is more or less of a compromise. It seems to me you cannot tell the ordinary individual that under certain circumstances give the patient alcohol and under other circumstances do not give him alcohol, because how can they decide? If they haven't any alcohol, it makes no difference which way they decide.

There is the thing. We would like to get an expression of opinion.

Second. Here is a wound. Now, as a matter of fact the wounds in industries today are very simple wounds as compared to the wounds in war, and in the past the wounds in war have been very simple affairs as compared to the wounds in this war. Now, I will ask those of you who have heard me speak before, to forget it, because the good things I have to say I have already said before.

There was a time in the treatment of a bullet wound when the instructions to surgeons in the army were to probe the wound with the surgeon's finger. Those were the instructions in the German and the French Army in 1870. Dr. Ashters, in his book written in 1884 writes: "The best probe for a wound is the surgeon's finger."

At the outbreak of the Franco-Prussian War, Lister said not to probe the wound with the finger, but to treat bullet wounds as he treated compound fracture—put a little bit of carbolic acid over it. Of course Lister attributed his wonderful results in compound fracture by placing over every compound fracture a little pure carbolic acid. But all those who have studied the question asked how much was due to carbolic acid, and how much was due to the fact that Lister did not probe the wound with his finger.

We have evidence that the suppuration of wounds in the wars previous to 1870 had more to do with the insertion of the surgeon's finger than the absence of the first aid dressing. That is a very important matter to remember. There were many elements of suppuration before that.

Ambrose Barry found out in a great battle where he could not take care of all wounded, to his immense surprise that the wounded who had never seen the surgeon were in far better condition 48 hours after the battle than the men that had been treated by surgeons. And as great a surgical mind as Billarro writes that he arrived on the battlefield two days afterwards and he found all the wounds healed.

Then there was the first-aid package. Now, was the uniform healing of these simple bullet wounds due to the application of a piece of sterile gauze, or was it due to the noninterference of that wound with the finger?

Then this war comes, and the bullet wounds of this war that are similar to the bullet wounds of the past wars as a rule heal, whether they receive a first aid packing or not. But the shell wounds of this war in certain localities do not heal whether they receive first-aid packing or not.

Now, the question is, have we any experience in Industrial Surgery that will allow us of an application of what is the best treatment for the shell wound. Of course it is probably familiar to you, why, if the shell wound on board ship heals as a rule without much suppuration, why should the shell wound in the trenches be almost always infected? On board ship the sailor can be clean; the ship is clean. It is very difficult on a battleship in the time of battle to render first aid: the men are scattered all over the ship. The results though are pretty uniformly good of all those who are not killed, and if the ship does not sink. But the experience of wounds in naval warfare is relatively small. The ship either survives with few injuries or goes to the bottom. So we haven't a large amount of evidence.

Out in France it is almost impossible, even with the more recent method of keeping the men clean to prevent infection.

We have no experience in the past to allow us to know what is best to do.

There is a new treatment of a wound of which you all know about, the Carrel-Dakin method. It is simply the application of principles well established. In this work we first come in contact with the controversy which is still going on in military wounds. Is an antiseptic of any value if applied immediately after the wound is made? Now, as far as we can ascertain from the industries the answer is practically uniform; that an antiseptic is of immense value in the wounds in industries to prevent infection. Whether that antiseptic should be applied by the individual or by the doctor who sees the wound quickly is a question on which I can get very little evidence.

Now, one would say academically, what do industrial surgeons know about the application of a wound dressing in which there is no antiseptic employed, as all of them use an antiseptic.

Apparently the consensus of opinion of surgeons at the front now is that the antiseptic is of value, and the sooner it is applied the better.

What then is the best antiseptic?

In a book that I told you of, written by the English surgeons, they speak first of carbolic acid—pure carbolic acid, or diluted carbolic acid. They speak of bichloride in different strengths, and picric acid, hydrogen peroxide, Dakin's fluid—and Wright says salt solution only. The French until recently used chiefly iodine, in different percentages, on the entire wound and the surface of the skin. The French stand first for iodine, the English stand first for carbolic acid.

What can you do? You have had no experience until recently with Dakin's fluid. There is just about as much difference of opinion among industrial surgeons as to what is the best antiseptic. We might say, as a first aid measure, opinion is pretty evenly divided whether an individual should be taught to use an antiseptic or not. The majority agree if you give any, let them have iodine. The great majority of surgeons in industries agree that iodine is the best method to be used as an antiseptic.

Now it may be some time before our army goes to France, and you may have an opportunity; and the message I want to bring to you is this: That, if you can, you should as quickly as possible standardize your views in regard to what should be taught the soldier in regard to first aid. Of course we have our Board of Standardization. It may represent your opinion. If it doesn't, you should express that it does not. We want you to experiment just quietly from now on as to whether the Dakin method as employed by Carrel gives in industrial practice just as good results as any other antiseptic that you have employed, because of all the antiseptics the Carrel-Dakin fluid is the one most applicable for continuous disinfection, which apparently is the only method of combating the infection of the shell wound. The sooner it is disinfected after the injury the better, and that disinfection should be continued if possible at intervals of every two hours from ten to twelve days. We haven't yet in sight any other antiseptic, even weak solutions of iodine, or carbolic, or bichloride, that apparently will answer as Dakin's fluid, or some new combination, and you have an opportunity for that, and some of your members are working to demonstrate whether that is the antiseptic that can be employed in industries. I will ask you to think of it; what is the best to teach with regard to first aid, and whether in your work the Dakin fluid is a good solution for a wound.

We will then have some experimental work going on in this country, as well as at the front, but remember what you are doing; you are concentrating the minds of your surgeons on a method of treatment of a wound, to be employed when you go to the army, and if it is the Carrel-Dakin method, they will understand it. (Applause.)

CHAIRMAN: The discussion of Dr. Bloodgood's paper will be opened by Dr. Lauffer, Medical Director of the Westinghouse Electric and Manufacturing Company, of East Pittsburgh.

DR. LAUFFER: The accidental injuries occurring in the general industries involve chiefly the eyes, fingers, hands, toes and feet. In the general industries, every employee meets with an accident approximately once each year. Just about one injury out of ten is disabling, providing the injured employees report at once to the Works Hospital. Approximately one disabling accident out of ten causes a disability exceeding fourteen days, providing redressings in the Works Hospital are continued uninterruptedly.

The increasing number of Works Hospitals, many of them in continuous operation, twenty-four hours a day, and seven days a week, provide instantaneous facilities for treating accidental injuries within the industries. The scope of service in the Works Hospital embraces (a) the surgical care of employees injured on the Company's premises, (b) the provisional treatment of those severely injured who are sent to hospitals in the vicinity, (c) the care of emergency sick cases, (d) health service in preventive medicine, (e) the physical examination of prospective employees, (f) the observation of disabled employees, where a beneficial organization is maintained, and (g) miscellaneous functions, connected with heating, ventilation, light, sanitation, occupational disease, instruction in First Aid, etc.

The Industrial Physician has a continuous round of duties, and his work is never done: it is routine,—the ratio of accidents per thousand of employees, year by year, shows slight variation in successive years. The types of accidents in any given industry show a striking uniformity from year to year.

It is this uniformity of incidence of accidents, and types of accidents, that make the industrial surgeon automatic in his activities. The work of the industrial surgeon becomes reflex, or automatic, and is done with deftness and speed, under circumstances demanding abridged surgical technique, yet requiring good recoveries.

The duties of the military surgeon, on the other hand, are occasional, but intense when that occasion arrives. The terriffic violence of modern methods of warfare, inflicting major injuries, leaves little in common between the industrial and the military surgeon, except in the field of First Aid.

We define as first aid: (a) the care of trivial injuries and mild sicknesses by the laymen, trained or untrained, on his own responsibility, and (b) the preliminary care of minor and major injuries, and various illnesses, by such persons, pending the arrival of the physician, or the transportation of the patient to a hospital, or its equivalent. Any other definition of first aid than "surgical or medical attention given to a patient by a laymen while waiting for a physician" is a confusion of terms. To designate as first aid the minor surgery performed by an industrial physician in a Works Dispensary is gratuitous disparagement.

The industries employing physicians on full time, and maintaining Works Hospitals and Dispensaries, open at all hours, have scant need for First Aid outfits. First Aid is superfluous, under circumstances where a doctor is immediately available. Physicians in industries usually prefer to see patients at once, before First Aid measures have been applied.

Suspended animation, as from drowning, electric shock, asphyxiation by gases, requires artificial respiration. The Commission appointed by the National Electric Light Association has endorsed the Prone Pressure Method of Artificial Respiration. The Conference Board of Physicians has unanimously approved this as the best method of resuscitation.

It remains for the American Association of Industrial Physicians and Surgeons to consider similar action.

Artificial Respiration must be taught to laymen, because our industrial life is such that frequent emergencies, calling for artificial respiration, must be met by laymen, else the patients will be dead before the arrival of qualified physicians.

(1) Artificial Respiration and (2) the control of hemorrhage by compress and by tourniquet, are to be considered as essential measures of First Aid, in which laymen must be instructed. Likewise, (3) the transportation of the injured,—persons suffering from (a) shock, and (b) fractures, must be in the hands of trained laymen.

The tendency of persons instructed in First Aid, holding diplomas, and otherwise, is to assume too much responsibility. The necessary limitation of First Aid to measures and remedies that may with safety and propriety be entrusted to laymen, has been a hard problem for the lesser industries, not having enough employees to justify maintaining a Works Dispensary, as well as for the larger industries, having some departments remote from the Works Hospital.

Big business demands standardization. In practically every human endeavor, standardization saves time, eliminates hesitation, insures speedy and uniformly satisfactory results.

First Aid was chaotic in 1915, and as variable as orthography in the days of Chaucer's "Canterbury Tales." Medicine, indeed, is a partial science at best, and in the field of First Aid, in particular, this confusion was appalling.

Representative industries, through manufacturers' associations, representing nearly four million employees, diligently sought the solution of the problem of reasonable First Aid, and sent their surgeons to the sessions of the Conference Board of Physicians. The outcome of that inquiry into what constitutes reasonable First Aid, is the N. A. S. O. First Aid outfit, exhibited here today.

The container is glass; the contents include (1) drugs, and (2) dressings, and are:

1 Tourniquet
1 pr. Nickel Plated Scissors
1 Triangular Sling
1 Wire Gauze Splint
12 Assorted Safety Pins
1 two-oz. bottle Castor Oil
2 three-oz. tubes Burn Ointment
1 two-oz. bottle 3% alcoholic Iodine
1 two-oz. bottle White Wine Vinegar
1 two-oz. bottle Aromatic Spirits of Ammonia
1 two-oz. bottle 4% Aqueous Boric Acid
1 two-oz. bottle Jamaica Ginger
1 piece of Flannel 24″x36″
1 Roll Absorbent Cotton
1 Roll 3″x10 yds. Gauze Bandage
2 Rolls 2″x10 yds. Gauze Bandage
1 spool 1″x5 yds. Adhesive Plaster
4 rolls 1″x10 yds. Gauze Bandage
6 packages 6″x36″ Sterile Gauze
1 Teaspoon
1 Medicine Glass
2 Medicine Droppers
3 Paper Drinking Cups
12 First Aid Record Cards

11 Finger Splints
12 Wooden Applicators
1 Instrument Box
1 Cotton Box.

This detailed list of contents were regarded as the best items to include in the outfit in the year 1915, in the collective judgment of the Conference Board.

The special requirements of particular injuries are cared for by adding to or subtracting from the standard contents of this jar.

The rules of procedure for the instruction of laymen were agreed upon by the Conference Board in advance of the selection of the contents of the jar, and it will be observed that the First Aid taught is preliminary, not final treatment, and that it is designed that the patient be given reasonable First Aid attention. pending the care of the case by a physician.

The consideration of a higher standard First Aid outfit, embodying an even wider experience, would be a fit inquiry for this organization. A committee appointed to that end by this body, to co-ordinate the knowledge of industrial surgeons in First Aid, would certainly advance the standards of First Aid in the industries, could improve the standard First Aid outfit, as herein described, and the equivalent outfits, duplicating it, in the scope of contents. When the industrial surgeons of this organization shall have agreed more universally on what constitutes the standard First Aid outfit, and directions for using the same, the knowledge acquired in industrial surgery can then be confidently applied to military surgery, in relation to First Aid.

If this organization can endorse the First Aid instructions and materials, as standardized by the Conference Board of Physicians, pending such additions and subtractions as our advancing knowledge of First Aid may dictate, then as industrial physicians, we would have a definite proposition to suggest to our military colleagues. (Applause.)

CHAIRMAN: The Application of our Knowledge of Industrial Surgery to Military Surgery is, of course, an important question—very important, indeed. It seems to me that from actual experience industrial surgeons ought to be able to supply or aid in supplying answers to problems which have been indicated to us by Dr. Bloodgood.

The subject is now open to general discussion, and we will be very glad indeed to hear further on this matter.

DR. A. W. COLCORD: I want to say that I have been very much interested in regard to the instruction of the laymen in the application of first aid.

I believe we have overdone this work; we have undertaken to teach too much, and allow them to do too much.

Beginning about five years ago, I devoted nearly three years to a series of first aid lectures to the men in the Clairton group of Carnegie Steel Mills. About forty stretcher crews were organized. Forty men were selected from the various mills for their special fitness, to act as captains. These men were trained for one year. Then they, with the aid of myself and three lieutenants, trained the crews.

I have gradually become convinced that we should mainly teach four things:

First—How to treat hemorrhage.

Second—How to treat shock and asphyxia.

Third—How to transport the injured man with a maximum of speed and a minimum of trauma to the proper place; this place with us is the Emergency Hospital.

Fourth—What not to do; to keep away entirely from the wound; not to apply a dressing; keep fingers and everything else away from it.

I believe attempted treatment of wounds by laymen has done infinite harm, and that we cannot condemn it too strongly. I speak now of work in Industrial Surgery, where there is a well organized emergency hospital reasonably near. I can give no opinion about military surgery, because I know nothing about it, but from my own experience in industrial surgery, which has been rather large, I believe I am right in what I say.

Now as to the treatment of wounds. We have been over the ground with the various antiseptics—iodine, bichloride, and cyanide of mercury; and had settled down about ten years ago to the use of Ochsner's Fluid. The wound is cleansed by scrubbing and pouring sterile water over it. Tags which will die are trimmed away. Then sterile gauze, cotton and a bandage are applied. Ochsner's Fluid is now poured on the dressings till they drip. A large bottle is given to the patient, and he is instructed to wet his dressings every three hours. A large amount of cotton is used in the dressings to filter out any dirt that may have gotten on outside of the bandage.

During the ten years in the treatment of over 6,000 wounds there has been no infection. When I say, "no infection," I mean no "clinical" infection; no reaction of the living tissues, such as one sees in every infected wound.

When Dr. Sherman returned from France November last, he brought with him the Carrel-Dakin method, which he studied for six weeks with Dr. Carrel. This he introduced into the Carnegie wards of West Penn and St. Francis Hospitals in Pittsburgh, and I had an opportunity to study it there. We have now introduced it into our emergency hospitals at the various steel plants of the Carnegie Company and are adapting it to ambulatory cases. So far the results have been highly satisfactory, but it is too early yet to express any decided opinions.

We are beginning to check up results with the microscope, so we can compare the relative merits of the two methods; I think we will have something to say about it later when we get a few hundred or a few thousand cases. In trying to make a comparison, one must remember that we get our cases right away, and although our steel mill wounds are often full of grease and dirt, they are comparatively clean from a surgical standpoint. Most of them would heal kindly if washed clean and dressed with sterile gauze. On the other hand, the brilliant results attained in Carrel's work in France were on old shell wounds full of pus and the various virulent germs from the trenches.

Some of the work I have seen in the Pittsburgh hospitals by Dr. Sherman has been equally good. The problem before us is:

First: Is the Carrel-Dakin treatment better adapted to the work in the emergency hospitals in our steel mills than the Ochsner's Fluid constant wet dressing that has produced such splendid results?

Second: Can the Carrel-Dakin treatment be adapted to the ambulatory cases, especially those who are sent back to work at once?

Two years ago, Dr. Sherman reported 77,000 wounds treated in the various Carnegie Works' hospitals with only 90 infections. Of these, 3,500 were mine with no infections. Of course, an occasional case comes in already infected when first seen, or one takes off his own dressings and fails to return until the wound is infected. Such cases are not chargeable to our technique and are not included in above figures. (Question put as to what is meant by "right away" after getting those wounds.)

Usually within ten minutes; never more than an hour.

QUESTION: What is Ochsner's Fluid? Ochsner's Fluid is saturated solution 3 parts boric acid, and alcohol 1 part. Our alcohol has 90 parts grain alcohol, 10 parts wood alcohol, and one-tenth of one per cent benzol. In using denatured alcohol for making solutions we get about one case of dermatitis per thousand; I believe this due to the benzol. Then I change in that particular case to the other Ochsner's Fluid, made with the grain alcohol, or use some mild soothing dressing on the skin. Where there is any irritation due to the denatured alcohol, as around the eye, we use that fluid made from grain alcohol. As we use several barrels of denatured alcohol a year, it is quite a saving in expense over the cost of grain alcohol.

Nine-tenths of this work is done by the nurses, specially trained for this work. I believe nurses can be trained to do the greater part of our industrial surgery—always working, of course, under the direction of a competent surgeon. My nurses can suture a wound, dress a burn or apply a bandage as well as I can. They give all my anaesthetics, and I am training them to make my blood counts, urinalyses, microscopic examination of wound discharges, and to collect water samples for bacteriological examination of drinking water.

Dr. R. W. Corwin: Last year I spent several months at the front in France and Belgium; saw much war surgery and witnessed the work of Drs. Carrel, Depage, Blake and others.

There is good reason for believing that the Dakin solution or some of its modifications, and Carrel method have advanced war surgery.

The success of this method depends upon removing from the wound all foreign matter and necrotic tissue; of properly preparing and preserving the solution; of applying the solution every two or three hours in such a manner that it will be in constant contact with every portion of the wound—but no part washed or flooded at any time; of taking smears every day or two for microscopic examination, that the condition of the wound may be constantly known; of closing the wound when free or nearly free from septic germs and of conscientious and thorough technique.

This method, properly conducted, almost invariably means shortening the process of healing and size of scar greatly reduced.

Since returning from the war zone, we have used this method quite extensively and with much success at The Colorado Fuel & Iron Company Hospital, Pueblo, Colo.

With regard to First Aid: We are teaching it at all our mines (coal and iron) along with the tooth brush drill and holding classes in the schools. We even teach First Aid in the Kindergarten, using the dolls with appropriate stretchers and beds,—the application of Tr. Iodine and bandaging. The little ones take it as play and are glad to imitate the grown-ups.

I have one more statement to make: that is with regard to alcohol. We find, in case of accident, that no alcohol does better than any alcohol and that the well can get no more good out of alcohol than the wounded.

Dr. Shoudy: My experience with Dakin's Solution in my work connected with the Bethlehem Steel Company has been very satisfactory. We have used this solution in our Clinics since October, 1915. The first which we used was made according to the original Dakin's formula, from Boric Acid and Chloride of Lime. Our experience covers thousands of cases, wounds of the nature generally treated in an industrial hospital—the small wounds. In the cases where it has been necessary to employ a wet dressing, we have applied it in the usual way, applying a wet dressing, giving the man a three-ounce bottle of Dakin's Solution with instructions to pour on a little of the solution every two hours. In some of the larger wounds and infections, we have placed one or two rubber tubes after the manner of Carrel with the open ends protruding from the bandage, given the man a small syrings and told him to put some of the solution in the tubes every two hours, showing him how to do it. We have tried this solution in comparison with bichloride of mercury, cyanide of mercury, boric acid and salt solution. In comparison, the Dakin's Solution has proven to be of value in the greatest number of cases. I do not say that it is the dressing to be always used.

(The question was put as to how the skin is protected.) If necessary to protect the skin from the solution, we do so with an ointment made up of ten parts paraffin, six parts bismuth sub-nitrate, 100 parts petrolatum. This ointment, by the way, is an excellent preparation to use for burns. We have been using it for all burns that are ambulatory, for the past two years. The dressing is flexible and the melting point is higher than the heat of the body. We have tried drying of wound by electric drier and find that it does not work any better than cleaning the wounds, except those of the eyes, with benzine or gasoline. We have cleaned all burns with benzine and used this ointment for the past two years with excellent results. The ointment may be heated and applied with a brush if desired.

We have followed Dr. Dakin's Formula from time to time and the results were equally satisfactory. I am of the opinion that Dakin's Solution is an excellent wet dressing for use in our clinics. Our routine treatment is to cleanse the wounds with benzine and apply the wet dressing immediately.

Dr. F. E. Schubmehl: Our experience with Dakin's solution has been about the same. The results have been most gratifying. We are using it altogether.

In regard to teaching First Aid to the layman, I fully agree with one of the recent speakers, that we have probably gone too far; but I cannot agree with him that we must not teach the layman First Aid—because he is going to do something anyway. To give them simple directions for applying some reasonably simple first aid, as outlined in the N. A. S. O. First Aid Jar, to my mind is time well worth spending. I want to impress upon you that we must teach First Aid in order to get results. With this First Aid instruction and equipment, there will be many cases covered that would not have gone to the doctor at all. You cannot drive a man with a small injury to a dispensary half a mile away. If he had something to apply right away, he would do it himself, or go to First Aid near-by. If he has nothing else, he will wrap around a piece of waste. If you have somebody near at hand who has received some rational First Aid instruction, it is worth while.

Just a word about prone pressure method of resuscitation. I believe all physicians are practically qualified to teach prone pressure method of resuscitation; and it is a good thing to teach.

Just a word of caution. Let us make up our minds what is best, get it down to something definite, and then you can advise the individual what to do.

CHAIRMAN: I will ask Dr. Bloodgood to close the discussion.

DR. BLOODGOOD: Mr. President, I will take but a few minutes —I will ask for five, because I don't know whether I will have an opportunity to talk to you again. I am not needed by the industries, and I am quite confident that the industries can get along without me—and there isn't much doubt where I shall be.

I would first like to ask how many in the audience—if you will raise your hands—have not only received but answered the questions sent out by the Board of Standardization from Washington? (Twenty hands raised.)

How many of you are in industries and should have received these, but haven't? (Forty-three raise hands.)

Therefore, if both you and the Board of Standardization's report are correct, it is not giving a correct view of the opinions of this Association on the questions asked.

Now I will tell you frankly, gentlemen, that those of you in industries have an opportunity now, if you will embrace it, and in my opinion it is far more important than any other service you can render just now. You are the only American Association, as I understand it, in the industries, and therefore no committee, nor any other organization, could get an expression of opinion as rapidly as this Association.

We must have an expression of opinion. That expression from men and women working in industries in this country on the question that I discussed must be standardized. We must have it. We want it from the entire country, if we can get it; and I hope before this Society adjourns that you will not only appoint a committee but a committee that will act and that will give the Board of Standardization the expression of opinion of the men in industries throughout this country, in regard to what we shall teach the soldiers about First Aid.

Now you know we intend to have at least five hundred thousand or a million men in camps, and they are to be instructed in First Aid. Now what can you do to add or detract from what the Army teaches? As one of the last speakers said, there seems to be no question that we must teach something; but don't let us waste time teaching something they don't need to know. That is the important thing.

Considering the entire experience of all groups—Germany, Russia, Italy, France—all of them—there is a disagreement in regard to what is the best method of treating a wound. What method shall we adopt? The Carrel-Dakin method is by no means universally employed. It is the minority method—even some of my own colleagues say it is an over-advertised method. The question is, is it true? We don't want it simply because it is advertised: we want it because of its value. Now you have an opportunity to test it. No one except men who have a large number of accident wounds come to them for treatment has an opportunity to test it. If it comes with a great expression of opinion, it is bound to have influence upon those in military authority who will direct how wounds shall be treated at the front.

A wound is like a cancer case, in which an early operation by a poor surgeon is better than a late one by a good surgeon. The earliest opportunity is the time for disinfection. If Carrel got good results 24 hours afterwards, what would he get if he were right behind the man and applied the solution right after he was shot!

I saw those wonderful mesh-work cloths they are sending to the front—like a bath towel, but of mesh work. You have heard somebody say we can instruct our laborers to pour Dakin's fluid on the wound; therefore we can instruct the ambulance driver or anybody who comes along. The wounded man is then sure of care at as early a time as possible, and when he goes back to the first dressing station or hospital the surgeon may find time to change the dressing. But supposing the surgeon has 500 and can dress only 100; he can't dress them all, but he can pour a little fluid on the dressings. It is perhaps more important to pour Dakin's fluid on a man's wound than to put Campbell's soup in his stomach. Perhaps some surgeon would have time to insert drainage tubes to the bottom of the wound, and then could give him a little syringe to drop in the fluid. It is not at all impossible: is it feasible? They see to it that the men are given water and food as they pass back. Those men would be better off without water and food if they but came back with a clean wound. Given all the water and food they wanted, they would be worse off than starving but with a clean wound. It is possible for a surgeon to re-open the wound, if he has time, to clean it out, take out the pus and scrape it and put the tube back again. The question is whether a mesh-work dressing is not more feasible. Industrial surgeons have the opportunity to decide this, and you have these three months to try it.

Dr. Patterson: I move that the chair appoint a Committee of three, to follow the suggestion of Dr. Bloodgood, and to report to Dr. Bloodgood the result of its investigations. (Seconded.)

Dr. Bloodgood: I do not think the report ought to come to me. I really think this investigation should be carried out, and I will be glad to help, but I believe that the men in the industries are in a better position to judge than I am. The point is that we want to get their opinion.

Gentlemen, this is a very expensive procedure. I mean if you are going to do this right, you had better appropriate some money for it and appoint a committee. If possible, pay that committee for full time, if you have some men who could devote three months of their time. Pay them—at least, do not let them pay for the work themselves. You will be making a great contribution. It isn't an easy thing. I have tried it in a small way, and the only thing I succeeded in doing was spending a little money. You should appoint a committee, but they must devote their full time to it and keep at it. We want their views every two weeks while they are experimenting.

I really believe I am not wrong when I say you have a great opportunity not only to make a great contribution to surgery, but to make the greatest contribution in preparedness which we ought to have made two years ago and failed.

Dr. Jones: I move to amend Dr. Patterson's motion, so that the members of this Association be assessed one dollar per head for the purpose of this investigation and if necessary two dollars per head. (Seconded.)

Chairman: It has been moved and seconded that the members of this Association be assessed one dollar per head and if necessary two dollars per head for the purpose of producing funds necessary to make this investigation suggested by Dr. Bloodgood.

Dr. Geier: I doubt whether that is advisable. I doubt whether we have the right to do it. Secondly, I think the Board may find a far better way to do it than this. Two dollars may not be sufficient; it may take five. If you limit the Board, it will limit the work.

Chairman: I agree with what Dr. Geier says.

Dr. Jones: I withdraw the motion.

Dr. Geier: Let the Board of Directors be empowered to raise sufficient funds for this, as may seem wise to them. (Seconded.)

Chairman: We have one motion, that the Chair be empowered to appoint a committee to undertake the work of discovering the best antiseptic for the treatment of wounds, and the general question of first aid—standardization of first aid; and the second motion will be, that the Board of Directors be empowered to find ways of carrying out such investigation to a successful conclusion in the shortest practical time. Is there any discussion?

I will ask for a vote on the first motion, which is, that the Chair be empowered to appoint a Committee of three to undertake this investigation.

Those in favor, will signify their approval by saying "aye." (Unanimous response of "aye.")

CHAIRMAN: The Chair will not appoint this committee immediately, as of course it will be necessary to think this matter over, but the Chair will appoint such a committee at the earliest practical moment, and the membership of the Association will be informed of the personnel of the committee.

Now, the second motion is, that the Board of Directors be empowered to secure the financial backing for the subsidizing of this investigation. Is there any discussion? If not, all those in favor of this motion will signify their approval by saying "aye." (Unanimous response of "aye.")

CHAIRMAN: It is so ordered. The Board of Directors will advise as to the proper method of raising money for doing this very important work.

CHAIRMAN: Naturally the matter of "Health Hazards in Munition Industries" is one of the most vital questions which is before the nation today. The unlimited production of munitions of every kind is the essential of our ability to wage war successfully. It is fraught with great danger. Unless the proper protection of the worker is assured, the industry will suffer.

We are fortunate to have with us Dr. Alice Hamilton, of the Department of Labor, who has gone into this subject, and who is prepared better than anyone else to present this matter to us.

It gives me great pleasure to introduce to those present, Dr. Alice Hamilton. (Applause.)

DR. HAMILTON: Mr. President and members of the Association, it is always difficult to address an audience of experts, as I know this audience to be, for I am sure there are men sitting before me who know much more about the making of explosives than I do. Dr. Hudson, for instance, knows more in a day than I can learn in a year. I shall simply have to ask the patience of these gentlemen and tell them that what I say is intended for the physician who is not as yet familiar with this particular industry.

The making of explosives is only a small corner of what we call the munitions industry, but it is a very important part, and I believe it will continue to be so from now on, even after the war is over. They tell us that some of the new explosives will be used for peaceful purposes, now that we know more about them. The same thing is true of the chemicals used to produce explosives. Formerly we imported them from Germany, now we shall continue to produce them ourselves. This means that many new poisons have made their way into American industry and are destined to play an important part in industrial medicine.

I shall not give you a detailed description of the effects of these various poisons, for I take it that that is not the point of greatest interest to you. I think you probably want me to discuss the means of prevention, the protection of the workmen against poisoning, and so I shall simply speak very briefly of the principal poisons encountered in the course of manufacturing nitrocellulose, picric acid, smokeless powders, nitroglycerine, detonators of various kinds and trinitrotoluene.

Nitrous fumes, which set up what the workmen know as fume sickness, are evolved in the making of all explosives, but especially in making nitro-cotton and picric acid. I suppose we may assume that nitro-cotton will be manufactured to an enormous extent from now on, as long as the war lasts. Picric acid is not an American explosive—we have made it chiefly for the French. I hope its use will diminish, for it is attended with danger from nitrous fumes, it is itself a poison, and it is made from another poison, phenol, which in its turn is a derivatve of the poison benzol.

Nitrous fumes have a caustic effect upon the respiratory tract and produce, in typical cases of severe poisoning, the rapidly increasing edema of the lungs, so familiar to physicians in charge of nitration works. The slower less fulminating form, which shows itself in a bronchitis or a pneumonia, the pyogenic germs fastening upon injured lung tissue, is less often recognized as due to nitrous fumes, but it is probably a very common form. We have evidence also to show that the immediate effects of the gas may be recovered from and later on pneumonia develop. As for tuberculosis as a sequence of nitrous fume poisoning, I can tell you nothing positive, for there is apparently no proof that workers in nitration plants suffer unduly from tuberculosis, nor is there proof that they do not. The truth is, men stay so short a time on the nitration area that it is impossible to tell what the slow, chronic effects of the fumes are. It would certainly seem probable that the action of the caustic on lung tissue would result in a place of minor resistance to the germs of tuberculosis.

Trinitrotoluene and some other less important explosives are nitro or amido, derivatives of the benzene ring, and have the property of destroying the elements of the blood and also of producing methemoglobin. In addition, those that are slowly absorbed set up degenerative changes in liver, kidneys and heart muscle, in liver especially. Toxic jaundice, a disease which is clinically and automatically identical with acute yellow atrophy of the liver, is known now in England as the most formidable of the industrial diseases. It follows poisoning by trinitrotoluene, especially in those engaged in pressing charges for high explosive shells, or melting and pouring charges, or planing and boring them after they are hard. Skin absorption plays the largest part in TNT poisoning, breathing of fumes and dust is secondary in importance.

Poisonous substances used in the production of explosives include benzene, toluene, phenol, anilin, nitrobenzene, methyl alcohol, sulphuric ether, and sulphuric and nitric acids. Our most important explosive, up to the time of the war, nitrogylcerine, seems to cause little or no trouble, once the men have grown immune to the severe headache that attacks them at first.

I found very severe benzene poisoning in connection with the manufacture of explosives; frequent but mild cases of anilin poisoning; rare cases of phenol poisoning; severe ones from the heavy acids, and numerous cases of mild ether intoxication, the last among makers of smokeless powder. These ether workers experience the same effects as men undergoing ether anaesthesia and the same after-effects. The question is whether repeated exposures set up organic changes, and we have not much evidence one way or the other with regard to this. From animal experiments it would seem probable that changes are set up in liver and kidneys, but industrial ether poisoning has never been really studied and it might be hard to make such a study, since here also men are not likely to remain long at the work if they find it uncomfortable.

I want to speak for a moment of the action of alcohol in enhancing the effect of these central-nervous-system poisons. They tell me that a powder man who has been in the ether-laden atmosphere for eight hours cannot stand even a moderate amount of alcohol, that repeatedly such men have been found dead drunk after one drink of whiskey or a couple of glasses of beer. Then in the workhouse their breath is so heavy with ether that the place smells like a surgical ward. Physicians to whom I have repeated this, ridiculed it, but to me such occurrences seem entirely credible. The man's nerve cells are already partially saturated with ether, and the alcohol is simply the last straw. I have found also that men poisoned with anilin and men poisoned with TNT may take a sudden turn for the worse, or even die, as the result of a single indulgence in alcohol. This is doubly important to industrial physicians, first because it means that no alcoholic workman should be employed in handling these poisons, and second because it means that an anilin worker or a TNT worker who dies apparently of acute alcoholism, may really be a case of industrial poisoning at bottom. A suit now in the courts concerns a worker in anilin dyes who went to a saloon after work, got drunk, and was dead by morning. I know also of two cases of TNT poisoning in which the fatal outcome could be traced to indulgence in alcohol.

Now as to the prevention of poisoning in this industry. Skin absorption must be prevented by strict personal cleanliness, which means abundant washing and bathing facilities and working clothes properly made and cared for. The British insist on TNT workers being given overalls with sleeves fastening over the wrist of the glove, and legs fitting into the boot. They also provide clean stockings daily. In this country I believe that the washing facilities are usually ample, but not the provision of working clothes. Nor is the use of baths as general as their provision. That depends largely, I find, on the attitude of the foreman. If he believes men cannot be made to take baths, then his men will not bathe, but if he starts with the idea that they can be induced to, then you will find them doing it. I know a trinitrotoluene factory which last summer succeeded in making 95 per cent of the force employed in nitrating and handling the product, bathe daily.

The prevention of fumes is a difficult problem, but the rule should be to prevent their escape; not to let them out and then try to catch and remove them. I went into the long shed of a shell-filling plant where there were no less than eight kettles filled with molten TNT, and covered only with half lids, so that the men could have room to feed and stir. The management had had much trouble with poisoning among the men and so they were trying conscientiously and expensively to draw out the fumes by means of fans in the outer wall, up near the ceiling, utterly useless for this heavy vapor. There was no reason why those kettles should not have been closed and feeding and stirring done mechanically.

Another important point is to have a strong draft. Just the other day I saw a large room in which they were trying to get rid of the heavy fumes of tetrachlorethane. At great expense they had put in a slotted floor, with a solid floor four inches below and connected with this between-space were large pipes to suck out the air and other large pipes for the intake. They simply forgot the last thing, the draft. I could find not a particle of suction.

In the case of dust prevention—and to a less extent in the removal of fumes by fans—one encounters the danger of producing explosions if the mechanism is not carefully planned to eliminate risk of sparks. When I began to study the making of explosives, I asked Dr. Hudson why vacuum cleaners were not used to get rid of poisonous dust, but he explained that in most cases the danger of explosion would make their use impossible. So we are reduced to cautious sweeping with soft brooms or wiping with cloths: But here also one should remember that an ounce of prevention is worth a pound of cure, that if dust is not allowed to fall on the floor, it will not need to be swept up. It is hard to get rid of explosive dust; the thing is to keep it in where it is formed.

I saw a shell-filling plant in which all the machines for planing and boring the solid TNT charges had been carefully covered and the shields connected with a suction pipe. Only there were at least two shields out of every five that leaked badly and so they had set a couple of men to sweeping up the debris. It did not seem to occur to anybody that those shields should be repaired. Managers of factories differ as much in their instinct for cleanliness as do housewives, and while one factory will be scrupulously clean, the other, doing the same sort of work, will be frightfully dusty. There is also a masculine way of doing work which no woman would be guilty of. I mean the way men will skim kettles of lead or any other molten substance, no matter how poisonous, and throw the scum on the floor, and then clean it up again. Imagine a woman making sweetmeats in such a way.

As to respirators to protect men against poisons, I am not in favor of them unless it be for a short emergency. An employer who depends on respirators is likely to neglect the really important things. Moreover if a respirator is dense enough to hold back dust, it is probably so dense as to make breathing a distinct effort and a strain on the heart. Then the dust that is caught is not harmless. It may possibly be volatilized by the heat and moisture. Two British physicians in charge of TNT workers have pronounced against respirators for this reason. Or dust may collect along the edge, where the pressure of the flap moistens and rubs the skin, and a little row of blisters or ulcers form along it. They have had to give up respirators in Paris green works because of this. No respirator can protect against fumes adequately.

Medical supervision is usually provided in all these plants, but it is not always as complete as it should be; the physician has not always as much authority or initiative as he should have. The British law regulating TNT factories requires what I should like to see in American factories, the appointment of a doctor whose right and duty it is to inspect the plant at frequent intervals and, at least once a fortnight, to look at every worker employed. This need not be a lengthy examination, indeed it need not always interrupt the men's work. After a while you come to be so quick in detecting the characteristic changes in color that you can pass through a room and pick out the men who need examination.

Such inspections show you what sort of work the people are doing, and the risks of each sort of job. And after that you should be given authority to shift men who in your opinion need it, to other sort of work, and they should never be allowed to return to the former job until you say so. I have seen some shocking cases of men whose symptoms came on slowly and who were allowed to keep on at work till they were seriously poisoned.

The provision of proper food for workers in explosives is recommended strongly by British factory inspectors. They realize better than we the importance of a hot meal in the middle of the day, and in most places it is provided on the premises, sometimes by deducting a small amount from the wages. They also advise the giving of a glass of milk or a cup of cocoa the first thing in the morning, as many work people come practically breakfastless to work.

The entrance of women into these industries is a situation we shall undoubtedly have to face before long. For my part, I see no objection to it. The work is, much of it, not at all strenuous. One manager told me that fully three quarters of the work in his place could be done by women. I asked him why then it was not so done, and he said it was because of the American prejudice against employing women in dangerous work. But that is pure sentimentality, and I feel sure that women whose sons and brothers are in the trenches will not feel that they must be shielded from the far slighter danger of accident or poisoning in the work of making explosives.

There is no reason to think that women are more susceptible to these poisons than men. On the contrary, since they dislike disfiguring eruptions more than men do and they hate the staining of the hands to a canary color, they protect themselves more by careful washing than men do.

On the other hand, there is great objection to immature workers of either sex. I should be very sorry to see an influx of boys and girls into this industry. I am glad to say that I can count on the fingers of one hand all those who I saw in the course of my investigation of forty-one explosives plants. Boys are not employed in this work so far. We have felt that we must have men mature enough to be cautious. That too I am afraid will be changed. The British think that nobody under twenty should be employed in such work. I think that is conservative enough.

I want to close with the simple plea,—not to let our standards be lowered now that the war is upon us. Great Britain has very generously told us of the mistakes that she made under the necessity of rushing into war. We are not rushing into war. We are far better prepared than Great Britain was. I don't think there is any reason why we should relax our care of women and children, and I hope this Association will agree with me, that we should not allow an excuse of necessity to make us give in to the careless, negligent employer, who after all is not really forced to neglect his men under stress of urgency, but because he is of a neglectful nature, or is striving to save money. That ought not to be allowed. (Applause.)

CHAIRMAN: I am sure we have all been greatly enlightened by Dr. Hamilton's very valuable paper, and I am sure we are all glad to welcome Dr. Hamilton as we did this morning as an Honorary Member of this Association.

Is Dr. Ellis here? If he is not here, I will ask Dr. Walter G. Hudson to open the discussion of Dr. Hamilton's very instructive paper.

DR. WALTER G. HUDSON: Mr. Chairman, and gentlemen; there isn't much that I can add to Dr. Hamilton's paper. She has covered about everything I can say. I have already placed my information before Dr. Hamilton, and she has placed it before you, together with data she gathered from other sources, in a better way than I could do it. But I think perhaps it might add a little interest to the subject if I speak from a different angle and give you a brief outline of what the explosives really are in the industries, and what their real purpose is.

No doubt you have all heard of trinitrotoluol, TNT, and various other chemical names that are used in connection with explosives, without knowing what they are really used for. You know in a general way that they explode. Now there are two general classes of explosives. One class is used for driving the projectile out of the gun and through the air: that class we call a propellant; and it is in this class of explosives gun cotton is used chiefly, as the principal ingredient.

Then we have the other class of explosives whose chief function is to explode with the utmost violence obtainable, and which produce an effect like you get from dynamite, etc. If you treat a mass of cotton with nitric acid so it is converted into gun cotton, it doesn't change the appearance of it at all. After the acid is all washed out, it still looks just like cotton, and if you should place it in a gun behind a projectile and ignite it, on account of its loose texture the first flash will spread all through the mass, the whole charge explode almost instantly. The gases will be evolved so quickly that the projectile will not have time to move away in front of it, and the gun would burst instead of driving the projectile.

If on the other hand you take a mass of nitrated cotton, gun cotton, and treat it by certain solvents so as to dissolve the cotton fibres, then when the solvent evaporates, it leaves a substance resembling horn. This is smokeless powder, which can be formed into pellets of different sizes, and when you load these pellets into the gun behind the projectile and then ignite them, each of them burns on the surface and gives off gas at a definite speed, depending upon the combined surface of all the pellets. The result is—the gas being evolved more gradually—the projectile has a chance to get moving in front of it, and a very high velocity is imparted to the projectile without harming the gun.

Trinitrotoluol, the modern military explosive which has so changed the character of war, belongs to the first or "brisant" class of explosives, like dynamite. Its usefulness for military purposes is because of its great safety and insensitiveness.

It has very high explosive power; perhaps higher than the highest grade of commercial dynamite, yet you can place it on an anvil and strike it with a sledge hammer, and you can't hammer hard enough to make it go off. This is why it is a safe bursting charge for shells. It can be melted over a fire or by a steam jacket and poured into the shells while liquid.

These high or "brisant" explosives will not as a rule explode if simply ignited: most of them will merely take fire and burn. They need an initial sharp explosion to get them started, and for this purpose fulminate of mercury, of which you have also heard Dr. Hamilton speak, is generally used, in the form of a "detonator" or "detonating cap." Fulminate of mercury is useful for this purpose because it always explodes sharply whether merely ignited or struck a blow; and the resulting sharp explosion is then transmitted to the trinitrotoluol, tetryl or other high explosive.

CHAIRMAN: I will ask Dr. Chaffee, to discuss Dr. Hamilton's paper.

DR. R. W. CHAFFEE: I don't know that I can add very much to what has already been said with regard to the munitions manufacture. As far as the trinitrotoluol is concerned, I think it is very important—and I don't know but that it was mentioned—to enforce cleanliness among the employees.

We follow out the systems of compelling the men to change their clothing on entering a plant and putting on clothing which has been washed—not only underwear and stockings but overalls and hats.

On leaving the plant they are required to take off these clothes, which are owned by the company, and take a bath and change to street clothing. I think it is very important to give special care to the feet. As we all know, a great many employees will go home and sleep in the underwear which they have worn all day. That, I think, is one of the most important things to avoid among the workers in this industry.

As far as fumes are concerned, of course we have to avoid the effects on the lungs. We have to watch out for this. Early treatment in these cases is very important—either by the plant physicians or by someone who understands the treatment. I find a great many of the patients hesitate to call upon plant physicians.

Our treatment is to give chloroform internally and aromatic spirits of ammonia in small doses, and given quite frequently. I have seen a great many cases relieved by this treatment, when given early. Some cases of course do not develop these marked symptoms until after they reach their homes, and then the condition is more difficult to control; but if treated early I find nearly all of the cases are promptly relieved, within a half hour or an hour.

CHAIRMAN: We have here in the audience, the President of the recently authorized Federal Compensation Board. I think his presence is of interest to us for the reason that should the Federal Government take over any of these industries the employees will immediately become Federal employees, and therefore become subject to Federal Compensation Laws.

We would very much like to hear from Dr. Little, who is Presiident of this Board. (Applause.)

MR. R. M. LITTLE: The Federal Compensation Act covers all the civil employees of the United States Government. There are approximately 450,000 at present, and the number is constantly increasing with the rapid expansion of the Government establishments on account of war. Presumably, everyone not enlisted who works for the Government is a civil employee. The Commission has not passed upon the question of officers.

The Act became effective by the President's signature on September 7, 1916, and assures compensation to those civil employees who are injured while in the performance of their duties, unless they are guilty of wilful misconduct or if intoxication is the proximate cause. The Act contemplates that the Commission shall be a co-operating branch of the Government and that it shall utilize the service which already exists in administering compensation. When an employee is injured, he must report to his official superior within forty-eight hours; his claim for compensation must be signed by his official superior and the medical officer of the plant where employed. If a medical officer is not available, the claim for compensation can be signed by any reputable physician.

Section 9 of the Act provides:

"That immediately after an injury sustained by an employee while in the performance of his duty, whether or not disability has arisen, and for a reasonable time thereafter, the United States shall furnish to such employees reasonable medical, surgical, and hosiptal services and supplies unless he refuses to accept them. Such services and supplies shall be furnished by United States medical officers and hosiptals, but where this is not practicable shall be furnished by private physicians and hospitals designated or approved by the commission and paid for from the employees' compensation fund. If necessary for the securing of proper medical, surgical, and hosiptal treatment, the employee in the discretion of the commission, may be furnished transportation at the expense of the employees' compensation fund."

In organizing the medical and hospital service for the administration of the Act, the Commission is carrying out the provisions of this section. The Navy and Army dispensaries and hospitals will render first aid; the Public Health Service and its physicians and hospitals will be available where they exist. We are finding it necessary to designate other hospitals and may find it necessary to designate physicians. At present, we are disposed to leave the employees free to engage the services of reputable physicians whom they prefer when Government physicians are not available. Our problem is comparatively simple for the large establishments, as navy yards and arsenals, but it becomes complex for the scattered employees over the country. There is a large number of postal clerks, letter carriers, rural mail carriers, men in the Reclamation Service, etc., who cannot be served by Government physicians and hospitals. As the medical and hospital service is a fundamental factor in the proper administration of a compensation act, we are concerned to learn from such bodies as yours all that we can that will enable us to develop an efficient and satisfactory service. Therefore, the medical officer of the Commission and myself are in attendance upon your convention to hear what you practical men have to tell us.

Dr. Patterson: We, in the State of Pennsylvania, charged with the administration of the law governing the manufacture of explosives, wish to have the help of this body and to go on record as most emphatically objecting to the propaganda being carried on by the Council of National Defense in Washington for the abolition of the labor standards in the United States. It is only a matter of a few weeks ago that the President, through the Secretary of War, wrote a letter to the Governor of the Commonwealth of Pennsylvania, and sent him what he described as a "model bill," which gave the Governor of the Commonwealth of Pennsylvania the power and authority during the continuance of the present war to absolutely destroy upon request of the Council of National Defense such labor standards which we may have in the Commonwealth of Pennsylvania; and I want to go on record before this assemblage, and I have gone on record to members of the Legislature of that Commonwealth, that if this war means the destruction of the standards that have been built up as the result of laborious effort on the part of the people, furnishing proper places for men and women to work,—it is the most frightful thing that has ever occurred to this country, and I believe that in the last analysis the Council of National Defense in Washington will be guilty of the most grievous wrong to the labor of that commonwealth when they ask that the standards for their protection be torn up and thrown into the waste paper basket.

Dr. L. L. Roos: Mr. Chairman, I might say something for the Department of Labor of the State of New York. It is only a few weeks ago I attended a meeting of a Committee selected by the Council of National Defense relative to setting up standards in this State. There was quite a discussion and I feel anything that might disturb the Labor Laws of the State of New York at the present time, which I believe are standard laws and recognized wherever labor laws have been in existence, would be a detriment to all of the workers in this State and also in this country.

We feel in the State of New York that almost everything is being done for the health and protection of the workers. We also feel that the Department of Labor of the State is entirely capable of supervising the employees under its control and we feel that any interference with the Labor Laws at the present time, such as stated, of the Commonwealth of the State of New York would be most unwise. We all should feel at this meeting that any disturbance of our laws as they now exist would be a crime against all kinds of employees and all forms of labor and society, if the standards which may be set up in the future would in any way interfere with the laws as at present on the Statute Books of the State of New York.

Chairman: If there is no further discussion, I will ask Dr. Hamilton to close.

Dr. Hamilton: I haven't anything further to add except to heartily endorse what the last two speakers have said.

Chairman: The next paper we have is "The Need for Health Insurance as Seen by the Industrial Physician."

I have received a telegram from Dr. Post, who deplores his inability to be present because of military duties.

He has said, however, that Dr. Crowder has his views, and was able to present them to the Association, and I will therefore ask Dr. Crowder to present Dr. Post's views on this subject.

Dr. Crowder: It is quite a surprise to me to be asked to present Dr. Post's views. I am not quite sure I know what his views are. He did not instruct me, or authorize me or designate or delegate me in any way to present his subject here. I believe, however, Dr. Post is of the opinion that the medical control of employees in the industries should be extended. He feels that it is not nearly so good nor so general as it ought to be. He feels that the agencies now providing for the medical care of employees in the industries are not as extensive as they should be. I think, therefore, if he were here he would ask for some assurance that endeavor be made to secure the enactment of some means to provide for the adequate care of employees in the industries. Other than that, I do not believe I know what direction Dr. Post's views may take.

Chairman: Is Dr. McClellan present?

Dr. John McClellan: I have talked to Dr. Post a number of times about the problems that confront all of us, in connection with the care of employees in the industries. The proposition is simply this: A man who makes $100 a month becomes ill; he has a wife and two children; he has been living up to his income. Sickness finds him penniless. It is necessary for him to be taken to a hospital and be operated on, and stay in the hospital. How is he going to pay for it? If not insured he goes into debt. At the present time, until we have a well working health insurance plan we have to take care of him the best way we can.

Now, in Chicago, for example, we have two, perhaps three, hospitals, handled by a force of specialists working together, who are unselfishly devoting part of their day's time in taking care of certain ward cases.

The corporations that are responsible for these people should plan for them so they can get the adequate finance and adequate measure of care for a sum within their means, until we get State Insurance; and I believe that corporations will show the way and prove that it is a feasible plan.

In Chicago they have taken up the proposition of the care of the tuberculous. In February the vice president of the corporation with which I am connected proposed a plan to a number of officials of four or five corporations, and it was received most enthusiastically by all of them. It is briefly this:

In Chicago we have 200,000 men and women who are employed by 33 corporations and industries. An initial toll of $2 per employee will build a $400,000 sanitarium somewhere in the neighborhood of Chicago. A yearly contribution of twenty cents per employee would give a fund of $40,000 for annual expenses. The details of course can be worked out. The employer would pay a minimum sum for his employee's care in this sanitarium. The whole thing sounds very simple. Mr. Hill has interested five of the corporations, and they have assured him they will do it. If it were not for the war, I believe it would be there in the summer.

If this may be done for the care of patients who are affected with tuberculosis and for others who have other ailments, I believe that when the corporations band together in this way and prove that some such method is feasible and workable and is agreeable to both the corporation and to the employee,—that would be the strongest argument, in fact, the greatest advance made toward State Health Insurance.

(Question asked: "Is there any provision for the doctors who have charge of the clinics in these hospitals—any remunerative provision?)

DR. McCLELLAN: In Chicago, no.

CHAIRMAN: I think we would all like to hear from Dr. Warren, of the U. S. Public Health Service, on this matter. He has made a special study on the question. I will ask Dr. Warren to discuss this matter.

DR. B. S. WARREN: Mr. President, in referring to Health Insurance the basic principle ought to be a matter of justice and not a matter of charity. If the doctors have to give their services free to any of these schemes it is on a wrong basis; it is not on a business basis.

The question of Health Insurance is such a broad one that I will not take up your time in discussing the broad subject.

The doctors of the country ought to hold out for a plan that will raise the standard of medical practice and make the practice of medicine better than it is today. Surely the standard cannot be raised if the doctor has to do his work for less than he can live on. He must have a living, and a living in accordance with his standards of life.

Now, as to contract practice. Any contract which is so cheap that will make the doctor have to slur or not pay the proper attention to his practice in order to make a living is on a wrong basis. Any capitation system which is in the hands of those who are going to bargain with the doctors, and get the doctors competing with each other, and continually reducing the capitation, is going to be worse than our present condition.

We should therefore insert into the Act or the law, some plan which will have this in mind, viz.: if a capitation plan is adopted and the capitation or the price is fixed by a Board, the doctors must have a proper representation. The report that was read here today agreed with my views on the subject. The doctors of this country should study all of these plans very carefully and endeavor to obtain what is right and proper. I do not believe that doctors should fight health insurance. You know the history of the fight in England, where the British Medical Association fought it. I do not feel that the doctors should advocate any plan unless they feel certain that it is for the betterment of the medical practice and the good of the people who are to receive their services. The one thing I do feel is that the sick person, and the character of the medical practice furnished to the sick person is of primary interest to the doctor, and we ought to get away from that selfish feeling of the medical profession first. I don't say all of the doctors view it in such a light, but we ought not try to make it primarily in the interests of the doctors. The doctor should receive a fair compensation for his work, but health insurance is primarily for the sick person.

The other point that I am very much interested in is the preventive features. Any Health Insurance system should have embodied in the Act an adequate system for the prevention of disease. Without that it will be simply a relief measure. The principles of prevention of disease may develop with the operation of the Act. The principle of making the employer and employee pay so much for it—pay for a day of sickness—may create a financial incentive to prevent sickness, but without some provision embodied somewhere in this legislation for the prevention of disease the financial incentive will not have an outlet, and will have to develop by slow process of evolution. I want to say here, there is no Health Insurance system that I have studied in foreign countries that has been properly connected with health departments and health agencies. Many of them have begun to create within themselves health agencies, but as yet none of them have been legally connected with the health agencies. I have heard many people say that this question of financial incentive will work itself out. It may in the course of years do so, but without some health system connected with it to furnish an outlet for this incentive I do not believe it will work for any immediate prevention of sickness, like we would hope.

CHAIRMAN: Is there any further discussion?

DR. H. J. CRONIN: I personally am absolutely against the principle of Health Insurance as set forth in bills I have read. We have just gone through the discussion of Health Insurance in Massachusetts. The so-called Bill of the American Association of Labor Legislation, was introduced with various amendments. The medical profession in Massachusetts in general practice were entirely against it. A commission was appointed to consider the bill and the commission got nowhere. It was finally referred to the next general session. They couldn't seem to determine whether to arrange a capitation system or a contract system. Whatever system they advocated was unjust to the medical profession. Finally it was said, "Let the doctor out of it entirely; let the employee in and get health insurance, and let him pay the doctor; if he is getting a benefit of ten dollars a week let him hire his doctor; don't put the doctor in the scheme at all." As I say there was no way that the doctor would be justly treated. They have in Massachusetts the Workmen's Compensation Act, and that includes disease and it seems to me the employers are paying their share along health insurance lines in the form of Workmen's Compensation.

I think the medical profession should fight against it.

Five years ago a bill was passed which put the average doctor right out, and after five years of the bitterest sort of fighting the bill was amended, to go into effect this year, so a man could have his own doctor. The bill originally passed gave the insurance companies the power to choose their doctor for the man; it gave a man no rights at all; he had to accept the insurance company's doctor. As I say, after five years of fighting by the Medical Society, the Legislature this year granted that one single amendment, that a man should be able to have his own family doctor treat him.

Dr. Warren: I did not say, Doctor, we should not fight an improper health insuranee method. I said we should try to advocate a proper one. I don't say that we should submit to anything that is improper. I wouldn't advise that at all.

Chairman: Before we pass to the next paper, there was one announcement that slipped my mind. I also wish to bring the attention of the Association to another matter. I omitted to announce the membership of the Publication Committee, and the Chair appoints the following members of the Association as members of this committee:

Drs. C. E. Ford, C. D. Selby, and D. B. Lowe.

I want to mention one thing that has filled us with regret during this meeting and that is the absence of our Secretary and Treasurer. I know we have all felt his inability to attend very keenly, although I must say that Dr. Shoudy has been most efficient in his secretarial duties.

I received this telegram a short time ago, from Dr. Mock, which I will read to the Association; it says:

"Greeting to our members, the pioneers in industrial preparedness. Deeply regret inability to be present."

The Chair would gladly entertain a motion from a member to the effect that this Association send a telegram to Dr. Mock, deploring the fact that he was unable to be present, and expressing to Dr. Mock its appreciation of the energy and time he has spent in the past for the development of this Association. It must not be forgotten that Dr. Mock was one of the most important factors in the birth and existence of this Association.

DR. JONES: I move that our temporary Secretary prepare a dispatch in the name of the Association to Dr. Mock along the lines mentioned. (Seconded.)

CHAIRMAN: It has been moved and seconded that our temporary Secretary prepare and send to Dr. Mock, in the name of the Association, a telegram expressing the regrets of the Association for Dr. Mock's inability to be present, and conveying its appreciation of his labors in the past. All those in favor will signify their approval by saying "aye." (Unanimous response of "aye.")

CHAIRMAN: We will now pass to our final paper, which of course, is of great technical interest to all of us: "The Operative Findings in So-Called Traumatic Inguinal Hernia—Analysis of 150 cases." Dr. John J. Moorhead, Chief Surgeon of the Interborough Rapid Transit Co. of Brooklyn, N. Y.

DR. MOORHEAD: A great many articles have recently appeared regarding the relationship of injury to the production of inguinal hernia. The consensus of opinion appears to be, that injury per se is not a causative factor and only becomes an accessory element under two conditions—namely (1) if structural weakness has potentially produced the hernia; and (2) if the hernia already exists, injury may be an aggravating factor. The writers who maintain that injury is not a cause of hernia base their opinion mainly on the known anatomy of the herniated region, and on the freedom from appropriate symptoms in the event of the appearance of a hernia soon after the onset of trauma.

Thoroughly in accord with these opinions, it occurred to me that an analysis of the operative findings in inguinal hernia would be of considerable value for or against the argument that hernia is not due to traumatism. Having this in mind, I have made a critical review of 150 personal cases of inguinal hernia operated on in the period between January 1st, 1916, and June 1st, 1917. All of these patients were adult males who declared that some form of injury was the responsible factor. It will be conceded that actual inspection of the dissected parts is the best sort of proof, beyond controversy, subject as it is to the critical tests of living pathology.

To a proper understanding of the matter, we must revert briefly to the anatomy of the region under scrutiny.

In foetal life the testicle is an intra-abdominal but extra-peritoneal organ that descends from its "rest," and at the 8th month of pregnancy has passed through the internal ring, along the inguinal canal, out through the external ring and thus into the scrotum. In this route it pushes before it a curtain of peritoneum (the processus vaginalis) that later encloses it when it arrives at its final "rest" in the scrotum and this curtain is known then as the tunica vaginalis testis. Thus every male has a hernia in the form of descent of testis. In this early condition the rings are practically superimposed and the length of the canal is negligible so that the route traversed from within the abdomen to the outside world is exceedingly small. Having reached the testicle, the canal is immediately supposed to contract leaving space only for the vas and its vessels. If, however, this closure fails to occur, or if the procedure is not uniform, the rings and the canal remain more or less patent and hence are weak spots in the anatomy. These inherent weak spots are just as anatomical or physiological as a patent foramen ovale, equally capable of ingenious but rather unsatisfactory explanations. Patent rings are then to the abdomen what the patent foramen ovale is to the heart. If this patency appears at the 8th month of foetal life, surely the individaul born a month later is the victim of a congenital weakness that is soon translated into a virtual congenital hernia. This is the foundation of the whole matter and serves to explain the onset in later life of typical inguinal hernia, particularly of the oblique variety.

We are justified then in postulating that without a weak canal and rings at birth, no hernia will subsequently form unless rings and canal are torn asunder or weakened by some external or internal mechanism.

The corollary of this proposition is that there is from birth an empty sac awaiting contents, and that this sac being continuous with that larger sac within the abdomen will sooner or later seek an occupant. This sac is but an excrescence of the peritoneum, a veritable diverticulum, an invitation for a resident by virtue of its empty loneliness.

This failure of ring and canal closure we know is much more common on the right than on the left side; hence right-sided are more common than left-sided herniae.

If these things be true, and they are abundantly verified, we are justified in assuming that hernial contents are occupants of a previously untenanted room, and that the tenant attains residence therein by virtue of many factors that need not now bear mention, save one—injury.

If injury is to be the means by which this empty sac is filled or enlarged, then the act of so doing must be accompanied by the appropriate elements that indicate violent occupancy. This protrusion is peritoneum, a tender responsive membrane; the occupants, equally tender omentum or intestine. To suddenly introduce one into the other infers symptomatic reaction on the part of both. This inquiry relates, then, to the findings on actual inspection of this occupied diverticulum of peritoneum, particularly respecting two elements:

(1) What evidences were present to indicate recent occupancy;

(2) What differences appear in the so-called traumatic as compared with non-traumatic forms.

1. *Recent occupancy* would be denoted by signs in the (a) sac, and (b) contents.

(a) *Sac signs* refer to changes in color, texture and fluid contents; in other words, peritoneal irritative evidences.

(b) *Contents signs* refer to peritoneal irritative evidences if the occupant is intestine; and adhesions, blood and altered consistency if the occupant is omentum.

The size and consistency of the *sac* is no infallible guide as to the duration of occupancy; but the absence of redness, heat, and swelling is sure proof that the lesion is not recent.

The amount of intestine or omentum within the sac is no infallible guide as to the duration of occupancy; but the absence of ecchymosis or alteration in color or consistency is sure proof that the lesion is not recent.

Aside from these basic elements of proof, we have the additional evidence as to the consistency of the contiguous muscles and fascia, the size of the cord, the tension and size of the rings.

In this series of 150 cases the age extremes were 64 and 18; average age, 36.

The majority of the patients were laborers, and 90 per cent of them had done hard manual work.

Operation was done in from one hour to several months after the alleged accident.

In general physique they averaged up to the usual weight and height for their respective ages.

The majority were foreign born, Italians predominating, Slavs following, and Irishmen coming next. This racial sequence merely indicates that the foreign born laboring class are in the majority, and in the New York City community, the Italians and Slavs outnumber all others.

Very few patients claimed *direct* injury as the exciting cause, and the great majority inferred that lifting, pushing and pulling were causative.

The symptoms of onset in about 12% were marked enough to cause the patient to cease work; usually the symptom was pain and a feeling of soreness. Very few patients complained of nausea or vomiting. External signs (aside from bulging or actual swelling) were rare, and if ecchymosis occurred it was generalized and incidental to contusions of adjacent parts.

In this group, both sides were operated upon in 112 patients; one side in 38 patients.

In unilateral cases, the right side was operated upon 24 and the left 14 times.

When the left side alone was involved, varicocele was a frequent associate.

Oblique or *Indirect* forms occurred in 97 patients.

Vertical or *Direct* forms occurred in 53 patients.

The combination of *Indirect* on one side and *Direct* on the other was found 36 times.

The combination of *Indirect and Direct* on the same side was found 3 times.

The average size of the herniated mass equalled a small egg, and by far the greatest number were just outside the external ring.

About 12 were scrotal, and in practically all such cases, the opposite ring was more or less dilated.

In this connection, it may be stated that the writer regards a hernia as in the first stage (first degree) if the ring admits more than the tip of the little finger and if an impulse occurs on effort.

The size, shape and contents of the *sac* varied widely, but the majority showed a conical, thick sac, closely adherent, and of the so-called congenital or acquired form only two of the interstitial variety occurred. Omental contents predominated, and in a very few instances were the intrasaccular contents adherent.

In about 10% the appendix was removed as it was relatively accessible.

In one case (right oblique inguinal) the sac lining was studded with tubercles, and the contiguous peritoneum and intestine were then found to be the site of a marked tubercular process; in this instance, the sac was so tough and adherent that the wearing of a truss was suspected.

In no instance was there any evidence of recent formation of the sac or occupancy of it.

These, then, are the pathologic findings in this group in which trauma was said to be the causative factor, and in no case were conditions found that could be ascribed to any recent occurrence.

We know that there are certain *external* signs in and about a hernia that indicate its age; and likewise there are certain *internal* signs of similar import. These, from without in, I have found to be the following:

(1) Deep layer of superficial fascia (Scarpa's Fascia) is thick and well developed when sac contents have not by pressure interfered with its normal tone.

(2) The three main sets of blood vessels of this region (superficial external iliac, superficial external pubic, and superficial epigastric) are generally well developed and present many branches, especially venous.

(3) External oblique fascia is often thinned, perforated, spread or actually split, and its lower end no longer shows the transverse arching to strengthen the external ring.

(4) External ring is widened and does not firmly encircle the cord.

(5) Length of canal is shortened and the rings tend to coalesce or superimpose.

(6) Internal oblique muscle does not fill in the lower part of the canal tightly, and thus the main protection is afforded by the fascia of the external oblique.

(7) Conjoined tendon weak, narrow or distant from crest.

(8) Sac firmly adherent to cord structures.

(9) Sac tough, thick, nodulated or shows white striae and the lining has lost the normal lustre.

(10) Contents adherent to sac or to each other, or both.

(11) Omentum moulded or shaped to fit the sac.

(12) Neck of sac open or easily dilated.

These internal markings indicate age, and a well developed hernia will present many of them in combination. The most important and common are those numbered 3, 4, 6, 7, 8, 12.

CONCLUSION.

These operative findings then, confirm the opinion that so-called traumatic hernia subjected to the critical test of biopsy or anatomical dissection resembles in all details herniae acquired in the ordinary way.

This survey also indicates that injury is but rarely an aggravating factor, and an operator in the absence of a history of traumatism, would be unable to tell from the findings in the vast majority of cases whether or not trauma featured in any way. (Applause.)

Chairman: I will ask that the discussion of this paper be opened by Dr. C. W. Hopkins. (Dr. Hopkins absent.)

I will call on Dr. Colcord.

Dr. A. W. Colcord: Mr. President, and gentlemen. About two years ago, Dr. Hopkins read a paper in New York—a splendid paper, on the subject of hernia, and Dr. Hopkins, I think, is one of the most competent men to speak of hernia I know of. In that paper he stated that an open ring is a potential hernia. I got up and discussed the paper, and heartily agreed with him.

About a year ago, Dr. Lauffer read a paper in Harrisburg, Pa., and in the discussion of this paper, I said again I thought an open ring is a potential hernia, and that any Pennsylvania corporation employing men is justified in refusing to employ a man with our present Compensation Law, who has an open ring or, as I claimed, a potential hernia.

During the past three years I have examined 6,000 men, taking great care to examine the condition of the external and internal ring of the inguinal canal. Among these 6,000 men I found about 500 cases of open rings. About 25 cases of hernia have developed among those men. Not one of those 25 hernias had a record of having had an open ring. Not one of the 500 cases of open ring has, to my knowledge, developed a hernia.

Now why is it? I have an open mind and am ready to be convinced. I wish somebody would explain it to me, for I confess I do not know the reason, but I feel like taking back what I said in New York and what I said in Harrisburg about open rings. I am beginning to feel that a man who has an open ring; who has reached the years of adult life; who has done hard manual labor and exposed himself to the trauma that may aid to produce a hernia; I feel that such a man is immune to hernia, on the same principle that a man who has been repeatedly exposed to smallpox without taking it has proven himself immune to it. There must be some other reason why these men with open rings do not get hernia. I have seen two cases among these 25 that did look to me like traumatic hernia. I failed to get anything confirming that from the men who operated. I believe those were real cases of traumatic hernia; I never have seen but the two. I saw each of these cases within a few hours after a severe strain. Both had marked tenderness at point of hernia with pain on movement. In one case this was so severe that I kept him in bed one week with an ice bag applied before sending him to the hospital for operation.

CHAIRMAN: I will ask Dr. Lauffer to continue this discussion.

DR. LAUFFER: I have heard of several instances of true traumatic hernia: A boy was trying to climb over a fence; it was a picket fence, and one of the pickets caught him in the groin: he developed a traumatic hernia. Another instance was the case of a man who was punctured in the lower abdominal region by the prong of a wagon drawn by a runaway horse: there was sufficient trauma inflicted to produced a real traumatic hernia.

Approximately 98 per cent of the herniae encountered in the industries are of the oblique inguinal type.

The descent of the testicle makes a weak place in the abdominal wall, and nature fails to obliterate the path of its descent. Nature's failure to obliterate the path of the descent, her failure to seal up and close the processus vaginalis, gives rise to several classes of anatomical defects—undescended testicle, congenital hydrocele, congenital hernia—each of which presents several types. The inguinal canal is thus the seat of many developmental anatomical anomalies.

In addition to the unobliterated processus vaginalis, the perivascular spaces of the arteries of the cord permit of many lines of cleavage; a weak transversalis fascia and defective musculature supporting the inguinal canal likewise contributes.

These regional anatomical defects, so well known to students of surgical anatomy, constitute the determining cause of an oblique inguinal hernia.

The exciting factor is some oft-repeated increase in the intra-abdominal tension, supplying the vis atergo; bronchitis, stricture, constipation are etiological factors in the causation of oblique inguinal hernia.

Since the oblique inguinal hernia is due to anatomical defects, in all cases except where a direct traumatizing force is encountered, let us employ the voice and the authority of this organization, to designate as traumatic herniae, those cases in which there has been direct traumatizing force applied, and to designate as latent herniae, all other cases, arising from various anatomical defects.

I, therefore, suggest the term *latent hernia*, rather than traumatic hernia.

Dr. J. P. Jones: I agree with Dr. Lauffer that this question of traumatic hernia is largely a matter of terminology. It is inconceivable to me that a sac can be formed by any single act of traumatism.

Dr. H. J. Cronin: I want to agree with the last speaker and also with the paper. I have handled several hundred cases of hernia and found only four cases of real traumatic hernia. In one case, a man was struck with a broom handle; in another, the man injured was lifting, and I believe the strain did him some harm, because I found evidence of trauma during the operation.

I made an experiment to see what a person could do toward forcing his finger into the ring in the normal condition. I defy any man to push his finger into the ring by one steady plunge. If you have ever tried it, I think you are convinced you cannot do it. You cannot push into the normal closed ring. I have had several persons, muscular men, make the effort.

Now, if you can't do that, you can't force a hernia through by any one effort. Whether this can be done when the ring is partially opened, partially patent, is another question. How long it takes to stretch the ring is another question.

Dr. W. H. White: Hernia is usually produced in two ways—possibly three—by external violence increasing the intra-abdominal pressure, and quite frequently occurs by a natural passing of the bowel through an enlarged ring into the sac without either external violence or a perceptible increase in the intra-abdominal pressure.

It has always been my opinion that in abdominal muscular strain incident to a fall or lifting, there is an increase in the intra-abdominal pressure of the bowel from above downward and that where the abdominal ring is enlarged that in the passage of the bowel through the ring there is a separation of the tissues which is an injury or a traumatism. In some cases, this condition is very small—in others it is greater, depending upon the individual case. We, therefore, believe that this increase of the intra-abdominal pressure is a contributing cause in the bringing about or the completion of a physical condition known as hernia. That it is not the primary cause, of course, is well known, but is the completing act or condition and is therefore compensible under our law. It is similar to other physical conditions which are not normal and which are aggravated while the claimant is in his course of employment, and without aggravation due to his employment would not produce disability.

Hernia, by external violence, such as the kick of a horse, is a very rare condition. Probably 95 per cent of all the hernia cases reported are completed by an increase in the intra-abdominal pressure by some means or other.

Chairman: Is there any further discussion? I will ask Dr. Moorhead to close the discussion.

Dr. Moorhead: I don't think I have anything further to say.

Chairman: Before we adjourn, I have an announcement to make. All of the Industrial Physicians are requested to meet right in front of this hall on adjournment.

Dr. Scull: I would like a point of information.

Has any thought been given to dividing us into industrial sections, sections for various industries, something on the line of the American Medical Association? We now represent all the industries, but these could be divided into sections. Here we represent all industries, but necessarily in a session of one day, we can't discuss the problems of all the industries represented. I am interested in the lead industry. When I get home I will be asked, "What have you found out about lead poisoning?" I will have to tell them I heard nothing about it.

Chairman: In regard to that, it is to be hoped as this Association develops, instead of having meetings one day, provision can be made in special sections for the discussion of the health problems of the various industries. At the present time, in view of the fact that only one day was allotted to this meeting and only the afternoon of one day to the presentation of papers, it was natural that we were unable to cover a very broad field, or rather that questions mentioned had to be of general interest or of peculiar interest according to the time and period. It is hoped, however, that in the future, as this Association develops and expands, opportunities will be found to have sectional meetings, relating to the activities of the industrial physicians in specific industries, and, of course, at those sections, papers having special bearing upon the work in hand will be presented.

This is, of course, a question for future action on the part of the Association. I am sure it is one that has presented itself to all officers of the Association. The only thing is that at the present time the Association is not sufficiently developed to undertake to carry out such plans. However, when we are joined by all the industrial physicians of the country, as I hope we will be, we can take up such matters with profit.

If there is no other business to come before the Association, a motion to adjourn is in order.

I think, however, before we adjourn, we ought to offer a vote of thanks to the Local Committee on Arrangements for the work it has done in enabling us to have this meeting and in making arrangements for the banquet.

Dr. Kahler: I move that a vote of thanks be extended to Dr. Ford, for the good work he has done. (Seconded, and unanimously carried.)

Chairman: The thanks of the Association are therefore extended to the Committee on Local Arrangements in general, and to Dr. Ford in particular, for their efforts in arranging for this meeting and the coming banquet.

Dr. Jones: I move we adjourn. (Seconded and carried.)

(Whereupon, at 6 P. M., the meeting adjourned.)

[It is our feeling that the Association and the Prize Committee are to be congratulated upon the general excellence of the papers, four of which appear to the Committee to represent the most unusual grasp on the subject pon which they were written.—Prize Committee]

PRIZE THESIS

WOUND INFECTION AMONG LATHE WORKERS.

An Investigation into some of the Factors causing Wound Infection in Industrial Surgery and Methods of Obviating Them.

By Marvin D. Shie, A. B.,

School of Medicine, Western Reserve University, '18

While serving in an emergency hospital of a large manufacturing plant last summer, I was impressed by the great number of infections and cases of furunculosis with which we had to deal. On some men a pinprick, if left unattended, developed into a severe lymphangitis; a slight scratch in twelve hours into a linear mass of pus; a slight abrasion into a suppurating ulcer; and a laceration into a mass of necrotic tissue and pus. There were dozens of cases of multiple furunculosis, some patients developing as high as fifty boils at once on their arms and legs and faces. It is probable that ours was not the only manufacturing plant troubled with experiences of this sort, since out of the total amount paid for deaths by the Industrial Commission of Ohio last year, 22 per cent was for those resulting from infections, and of the total amount paid for disabilities and loss of time, 10 per cent was for the same cause.

In our plant there are employed about 2000 men, representatives of many nations—Americans, Canadians, Irish, English, Scotch, Welsh, Swedes, Russians, Poles, Germans, Austrians, Lithuanians, Hungarians, Italians, Armenians, Slavs, Bulgarians, Serbians, etc. Their standards of living vary as much as their nationalities, some of them living in places as crowded, filthy, and unkempt as are found in our city slums; others in clean, tidy cottages with little gardens. In age, they vary from 16 to 60. Their general health is good, seeming not to be affected in the least by the filth of some or the cleanliness of others. The tenure of employment is exceedingly variable, some men working only a few hours before they quit, while others have been with the company for twenty years. The majority of labor, however, is transient.

The plant is situated on a hill, and has Cleveland electric power and Cleveland water. The plant includes a carpenter shop, old machine shop, new machine shop, structural shop, forge shop, bond room, packing room, pumping station, power house, yard where the structural work is assembled, hospital and offices. Each department has its own toilet rooms, wash rooms, and shower baths.

All of these departments were represented by patients who came to the hospital. From 50 to 80 patients were seen daily, and of these 8 to 10 per cent had furunculosis, and about 5 per cent had wound infections of various sorts (these percentages are mutually inclusive). It was soon noted, however, that these cases all came from the two machine shops. When this was investigated further, it was discovered that of all the 1,200 men or more in the machine shops, none had multiple furunculosis save those who worked on lathes, and, furthermore, that 90 per cent of the infections occurred in men working on lathes. The new machine shop is given over to the manufacture of 8-inch shells, and houses about 400 lathes. The old machine shop is given over to the manufacture of machinery of various kinds, and houses only about 20 or 30 lathes. The cases of infections and furunculosis in these two shops varied directly as the number of lathes in each. The men employed on the lathes were of all nationalities and ages, and of the same general health as the rest of the men.

The localizing of all furunculosis and the great majority of infections among men who worked on lathes naturally made us suspect that some element of the lathe work was the causative factor. This was further emphasized by transferring some of the men. Several men with furunculosis working on lathes were transferred to different types of work in the same and in other departments. In a week the boils began to disappear, and before long the men were comparatively free from them. Likewise, some men in other departments, free from furunculosis and infections, were shifted to lathe work. About 35 per cent of these men developed furunculosis, and in nearly all of them slight wounds which ordinarily would have caused them but very little trouble became exceedingly troublesome, requiring constant attention and care to keep them from becoming infected. This was considered sufficient proof that lathe work was causing the trouble. The next problem was to discover the troublesome factor.

There were two possibilities: oil and cutting mixture. The oil was suggested by some of the men, and not without reason, for it is a well known fact that employees in machine shops, factories, etc., in which the men come into contact with lubricating oils, especially when the oils are used automatically over and over again, are particularly liable to suffer from dermatitis and furunculosis—"oil pimples"—on the parts of the body which are constantly in contact with the oil. However, there were men elsewhere in the shop working in oil who had "oil pimples," but whose furunculosis was not nearly so severe, and who were not nearly so subject to wound infections as the lathe men.

Cutting mixture is a compound of animal fats, petroleum oils and usually acids, used to facilitate the action of the cutting tool of the lathe upon the "job" in the lathe. As the "job" revolves in the lathe, the cutting mixture runs in a steady stream upon it at the point of application of the cutting tool. It then runs down over the job and the lathe into drains beneath. These drains all empty into a central reservoir, from which the mixture is pumped up into tanks near the roof. The mixture flows from these tanks, by gravity, through the system of pipes to the lathes. Thus the mixture is used over and over until it becomes so dirty as almost to clog the pipes (at least this was the condition before our investigation). The men spit into the mixture in the drains beneath their machines, throw their tobacco into it, and otherwise contaminate it. As they work, the men are constantly in contact with both the oil and cutting mixture—their clothes were often saturated with them. Thus it seemed that either might be a fruitful source of infection.

Having determined the possible causative factors, we set about the investigation of each of them. Stained cover-glass preparations were made from oil and cutting mixture, and each showed the presence of cocci and bacilli—very few in the oil and very many in the cutting mixture. Then cultures from each were made on glycerine agar and blood serum, and incubated in an electric incubator at 37.5° C. No growth whatever was obtained in the cultures made from the oil; the tubes were absolutely clear. On the other hand, the cultures made from the cutting mixture were covered with a cream-colored growth in about twelve hours, the glycerine agar having more growth than the blood serum. Smears made from these cultures showed an enormous number of staphylococci, some large diplococci, a few short chains of streptococci, and several strains of bacilli. This was repeated a number of times and the same results obtained each time. Plates made from these specimens contained a number of putrefactive colonies, mostly aerobic spore-bearers, and a large number of colonies of Staphylococcus aureus. Cultures made from the furuncles and the infected wounds showed the same kind of growth and the smears showed the same kinds of organisms.

We next tried the effects of inoculation. A series of guinea pigs was inoculated with suspensions of organisms from cultures made from furuncles and infected wounds, and a series was inoculated with suspensions from cultures made from the cutting mixture. Three modes of inoculation were tried: scarification, subcutaneous injection, and intraperitoneal injection. Other pigs had similar inoculations of distilled water and some had nothing—these served as controls. (See table).

	24 hrs.	36 hrs.	48 hrs.	72 hrs.	120 hrs.
Control pigs.	Lively as ever.	Well.	Well.	Well.	Well.
			CUTTING MIXTURE.		
Scarified Pig	Lively, but seropurulent material along excoriations.	More pronounced.	Healing.	Healing.	Healed.
Subcutaneous	Decidedly less lively.	Lay inert in corner of cage, under straw. Roused with difficulty.	Sick, almost comatose.	Recovering.	Almost well. (Well in 6 days.)
Intraperitoneal	Decidedly less lively.	Inert in corner of cage under straw. Roused with difficulty.	Almost comatose.	Slightly better.	Recovering. (Well in 7 days.)
			WOUNDS AND FURUNCULOSIS.		
Scarified	Very lively, but pus under scabs on excoriations.	About same.	Healing.	Healed.	Healed.
Subcutaneous	Somewhat less lively.	Very quiet. Not easily aroused.	Inert in corner of cage under straw. Roused with difficulty.	Slightly better. More easily roused.	Much better. Practically well.
Intraperitoneal	Much less lively.	Almost comatose.	Slight movement. Roused with difficulty.	Better.	Better. (Well in 6 days.)

Ten days later, when the pigs were all apparently normal again, I repeated the experiment, changing the pigs around, and got practically the same results. After another intermission of ten days, I repeated the experiment again, and got practically the same results, though the reactions were less pronounced. Guinea pigs were rather an unfortunate choice for these inoculations, for I discovered later that they are somewhat immune to staphylococcus infections, and staphylococci made up the greater majority of the suspensions. Considering this immunity, I feel that, since all of the inoculated pigs reacted, the virulence of the organisms was perhaps above the average.

These results demonstrated rather conclusively that the cutting mixture was the cause of many of our infections, and also that whatever harm the oil exerted, it was probably not due to its bacterial content. There was still a possibility, however, that the oil was causing the furunculosis. But "oil pimples" though numerous, do not develop into the large boils and even carbuncles, with which so many of our patients were affected. The oil might have a local effect, causing irritation and an inflammation which, instead of leading to an effusion of liquid, leads to an emigration of leucocytes, thus producing pustulation—a type of dermatitis venenata. Some drugs possess a specific chemotactic power on leucocytes and thus lead to aseptic pus formation; their injection (hypodermic or into serous cavities) leads to the collection of pus, even when asepsis is perfect. Turpentine, croton oil, petroleum, mercury, silver nitrate, digitoxin, cadaverin, and a few others are the principal examples. However, all boils and pimples that were investigated contained staphylococci. It may be that the constant irritant action of the oil on the skin, following the hairs down into the hair follicles and setting up an irritation there, caused localized points of lessened resistance which readily succumbed to the attacks of any staphylococci which might later gain access to them. It is not likely that the oil itself is so strongly irritant as to cause the furunculosis unaided. We must consider, then, as causative factors, both oil and cutting mixture, but especially the latter, since our investigations seemed to place the greater blame upon it.

Upon inquiry at the Department of Bacteriology of the Public Health Division of Cleveland, I found that specimens had been submitted for analysis from various plants having apparently the same difficulties as we were having. A report of these follows:

No. 2215. Wash water.
No. 2216. Lard oil.

Sent in by Mr...........................
...........................Machine Co.

Reported April 28, 1914.

"Plates made from these specimens contained a number of putrefactive colonies, mostly of the B. subtilis type, together with a few moulds."

"No pyogenic organisms were found."

No. 3617. Alkali water.

Sent in by Mr............................

...........................Machine Co.

210 Colonies per gramme. Mostly B. subtilis type. No pyogenic organisms.

No. 4654. Oil before use.

No. 4655. Oil after use.

No. 4654. Several putrefactive colonies, no pyogenic.

No. 4655. Numerous putrefactive colonies.

A number of colonies of staphylococcus aureus.

(From C. H. Oil Co.)

As will be noted, the last of these specimens, i. e., "oil after use," presented the same bacteriological findings as did our own cutting mixture. Our oil also showed the same morphological forms, but the organisms in it did not grow, and so probably were dead.

The portals of entry by which the germs might gain access to the system were many—cuts, abrasions, puncture wounds were exceedingly numerous. Small particles of flying steel from lathes cause innumerable small puncture wounds, each of them sufficiently large to form a portal of entry. We passed the electric magnet over many arms apparently free from steel, and the magnet came away covered with fine steel "hairs" and splinters pulled out of the arms, leaving almost microscopic puncture wounds. We made cultures from the arms of these men and in less than ten hours the cultures were covered with bacterial growth. A series of 25 college students was taken and cultures were made from their arms in the same way. The majority showed some slight bacterial growth but nothing approaching that obtained from the arms of these workingmen. It could not be otherwise, for the arms of the latter were constantly wet with oil and cutting mixture.

We next faced the problem of prevention—the prophylaxis. In regard to the oil, about all that we were able to do was to try to find men who were more or less immune to its irritant action. There seemed to be no way of counteracting these irritant actions without injuring the properties of the oil. With the cutting mixture, however, it was an entirely different problem. This contained living organisms, the main cause of our trouble. The problem then was to find some cheap and efficient means of killing the organism *without* injuring the properties of the mixture. The possibilities were (1) steriliziation by heat and (2) disinfection by chemicals.

Sterilization by heat can be carried out in a variety of ways. Probably the most efficient method, however, is by circulating steam through coils of pipe placed in the reservoirs and tanks containing the mixture. In this way the temperature attained by the mixture in the tanks is sufficient to kill the organisms present. A disadvantage of this method, however, is that as soon as the mixture leaves the pipe it is so distributed that it will at once become recontaminated, and would therefore reach the workmen in almost as dangerous a condition as before treatment.

The other method, that of disinfection by chemicals, obviates this disadvantage, since the bactericide is constantly present and renders harmless any organism which might come into contact with it. The selection of the proper germicide for disinfection was really a problem of the makers of the mixture, and as soon as we made them acquainted with the facts in the situation, they were very glad to co-operate with us and to do all in their power to render the mixture sterile. It may be well, however, to mention some of the difficulties which have to be met with in making a compound of this sort germ-proof. In the first place, it is impossible to use any inorganic or metallic germicide or disinfectant such as $HgCl$, $CuSO_4$, $AgNO_3$, $FeSO_4$, H_2SO_4, HNO_3, $HC_2H_3O_3$, etc., because of the action of the chemical on the metals with which it would have to come in contact. Oxidizing and reducing agents, H_2O_2, $KMnO_4$, SO_2, O_3, I, Br, Cl, etc., are inapplicable because of their instability and the presence of organic matter in the cutting mixture. Likewise disinfectants of the fatty series such as $CHCl_3$, CHI_3, CH_2O, C_2H_5OH, C_3H_5 (OH_3), etc., are too unstable and besides would be too costly. Some of them would also interfere with the action of the compound. Alkaloids are inapplicable, and the only group left is the coal tar series—phenols, cresols, lysols, etc. This group is the least objectionable.

But the nature of the antiseptic substance and the kinds of microorganisms are by no means the only factors which determine the efficiency and usefulness of the antiseptic. Among the other important factors may be mentioned the number of bacteria to be destroyed, the nature and quantity of the associated material, the time of exposure, the degree of dilution, the toxic and corrosive action of the disinfecting agent, and the cost.

The greater the number of bacteria and the more frequently they receive additions, the more disinfectant must be used and the more frequently must it be renewed. Thus after the addition of phenol to the cutting mixture, we found that it inhibited the growth of bacteria for only about one and a half days and then was no longer effective.

The nature and quantity of the associated material is of great importance. Cutting mixture is a more or less oily solution and also contains considerable organic matter, especially after passing through the pipe and drainage system several times. Carbolic acid acts scarcely at all antiseptically when in oily solutions due to their great solvent power for phenol, preventing its transfer to the bacterial protoplasms. Likewise in the presence of much organic matter phenol must be used in a concentration of about 5 per cent to be effective.

The time of exposure is not of so much importance in this case, since the organisms are exposed to the action of the disinfectant as long as it remains active. This time varies with the stability of the agent, the amount used, and the frequency of renewals.

The degree of dilution of the antiseptic is very important. A 5 per cent solution of phenol is much more effective than a 25 per cent solution. On the other hand, a solution must be strong enough in any given case to be effective. The various antiseptics vary greatly in their effective strengths. The element of cost also enters here.

The toxic and corrosive action of the agent and the ease with which it is absorbed are of importance in deciding its practical usefulness. There are men who are susceptible to the odor of the coal tar antiseptics such as phenol and creolin, and cannot work with solutions of which these are a part. This is one of the difficulties which we encountered.

Then, too, the cost of the disinfectant is an important factor, especially so in these modern days when manufacturers watch very closely every element which enters into the cost of production to cut down to the very smallest margin the producing cost of the manufactured article.

We have shown that the coal tar disinfectants are practically the only ones available for our purpose. Of these the phenols and cresols are of the most importance. As stated above, however, phenol is to a large extent rendered inefficient by the oily character of the solution. Besides it would have to be present in the strength of 5 per cent to destroy all the organisms in the presence of organic matter. In this connection the element of cost is important. Cresols form the major part of crude carbolic acid, and contain the CH_3 group. This group diminishes its toxicity and increases its antiseptic power. The cresols are about three times as powerful as phenol in disinfecting value. A strength of 1 per cent to 1.5 per cent is effective and only about one-fourth as toxic as phenol. Their cost is also much less than that of phenol. The one disadvantage of cresols is their very slight solubility in water. This insolubility can be readily overcome, however, by emulsifying agents. A cresol, then, would seem to be the most practical and efficient disinfecting agent for our purpose.

Two methods, then, of sterilization are available: by heat and by chemical disinfection. Both have been tried and found to be more or less effective. A large foundry about a mile from the plant of which I have been speaking had the same trouble. They used the heat method and found that it reduced their infections and furunculosis considerably, though it did not entirely stop them. The chemical method was tried in our plant. Phenol was found to have the disadvantages enumerated above: it kept organisms from growing in the mixture only for about one and a half days. Next a mixture of phenol and wood alcohol was added to the cutting mixture sufficient in amount to make a 5 per cent solution when diluted with water. This was found more efficient than phenol alone. Solutions and preparations of cresol were then tried, and it was found that a smaller per cent kept the solution free from living organisms for a much longer time than did phenol, viz., for about six days. Another dose had to be added then or else new cutting mixture used to keep the mixture sterile. This served to reduce very markedly the infections and furunculosis, but some of the men could not work with it because of susceptibility to the odor. This is a small matter, however, which can readily be overcome. It is quite likely that further modifications are capable of being made which will reduce the number of cases still more. For the past three months the cases of infection have been less than one-half of one per cent. and no complaints are heard from the men regarding either oil or cutting mixture. Where it seems probable that living pyogenic organisms are also present in this oil, an antiseptic might be added to it also. We did not try a combination of heat and disinfection, for there was no steam in the shops, all the power being electric. But where steam is available, I believe that a combination of both methods would prove efficient, and would greatly reduce the cases of furunculosis and infections with which the emergency hospitals of so many of our large manufacturing plants have to deal. Where the men are sufficiently intelligent, a program of education could be instituted so that the oil and cutting mixture would not so readily become contaminated.

Summary and Conclusions

1. In a large manufacturing plant the vast majority of cases of wound infections and furunculosis were found to be localized among lathe workers in the machine shops.

2. The peculiar features of lathe work are the use of cutting

mixture and oil, and the manner in which these circulate and are used over and over again, thus making them extremely liable to contamination. This contamination rendered them open to suspicion as factors in the causation of the wound infection and furunculosis.

3. These suspicions were borne out by bacteriological investigation and animal inoculation, which showed the causative factor to be pyogenic organisms which were present in vast numbers in the cutting mixture and less numerous in the oil. Marked results were obtained.

4. Abundant portals of entry for these organisms were found on the arms of workingmen in innumerable small cuts and punctures made by flying chips of steel from the lathes.

5. Methods of prophylaxis: (a) By heat, (b) chemical disinfection, (c) a combination of these two. Various chemical disinfectants were tried and the cresol group found to be the most effective and least expensive.

6. By the use of chemical disinfection wound infections have been reduced from 5 per cent to less than 0.5 per cent in the plant under consideration, and furunculosis has almost disappeared.

SOME FORMS OF OCCUPATIONAL DERMATOSES FOUND AMONG MUNITION WORKERS.

By A. Moncrieff Carr, of West Grove, Pa.

The importance of the study of the prevention and treatment of occupational diseases among munition workers is emphasized by the belief that, after the European War, the great majority of those plants devoted to the manufacture of substances used in the preparation of high explosives, will be converted into plants for the making of dyes and chemicals for which we largely depended on Europe.

The number of those employed in the manufacture of munitions in ten Eastern States is, at present writing, about 100,000; but there is an enormous turnover of labor in munition plants, especially where the danger from explosion and poisoning is greatest.

Haste has been the greatest evil in this industry since the beginning of the war in 1914. Undoubtedly much illness and death resulted during the first year of the war, in trying to get out explosives in a shorter time than was required to make them properly.

Naturally the first effort was to avoid the danger from explosion, and in this effort chemists and engineers did not notice the slow and insidious danger of poisoning.

Dr. Alice Hamilton of the Bureau of Labor says, "It is impossible to discover how much occupational disease has been caused by work in this industry since the war broke out. Some plants, not many, furnish no medical service to their men, who must go outside . . . . . the majority of firms employ a physician . . . . . who makes occasional visits . . . . . such physicians cannot or will not give any information to an investigator . . . . . on the other hand even when excellent care is given, no proper records are kept."

In the description of the skin affections to follow, it is to be remembered that it is in the process of nitration of the aromatic series, required in the manufacture of picric acid, trinitrotoluene and tetryl, that most of the severe dermatitis occurs. There is very little in American literature, and not an over-abundance in European, to aid the phyiscian who is engaged in this work, and it would be well if more investigation were instituted along this line.

I. PICRIC ACID AND TETRYL DERMATITIS.

It has been only since the war that picric acid and tetryl have been made in large quantities in this country; it has been manufactured in England, and to some extent in Russia, for a number of years, and is known by them as Lyddite. The Du Pont Company at Carney's Point, N. J., have the largest plant in this country, and employ about 1,500 men in this department alone.

The following table will show the different forms of dermatitis at their Deep Water Point Works:

June to October, 1916.

Synthetic Picric Acid Dermatitis	due to Di-nitro-chlor-benzol	208
	due to Di-nitro-phenol	41
Picric Acid Dermatitis		92
Tetryl Dermatitis		30

The following description and statistics are taken from personal observations, with the help and kind permission of Dr. Karl Osterhaus, who was, at the time, chief surgeon at the Deep Water Point Hospital of the Du Pont Company.

Etiology—The greatest number of cases were due to "dinitrochlorbenzol," a compound formed in making synthetic picric acid, and were of a more severe type than those due to handling of the finished product. Exposure to the fumes will cause an eruption as readily as contact with the dry powder. The inflammation from tetryl is identical with that of picric acid, except in degree of severity, the latter being more severe and more resistant to treatment. A peculiar feature of tetryl noticed in our plant was a seeming immunity to a second attack of the eruption, although Enid Smith of London states that one exposure increases susceptibility.

Symptoms—An intense itching is the first sign, usually confined to the backs of the hands and on the ankles followed by an erythematous rash. The eruption is first seen as small, well defined red pimples on the backs of the hands, the wrists, and the ankles, and often on the inner aspects of the thighs; it closely resembles dermatitis venenata or ivy poison. The face is seldom affected but the nose and mouth at times are slightly inflamed. The rash soon spreads and the parts become red, hot and swollen and occasionally is accompanied by a thin serous discharge, later becoming purulent from infection by scratching, but more often the eruption is dry.

I removed one of the crusts on a severe case and cultured the discharge on Loeffler's blood serum which showed a pure culture of staphylococcus aureus. There is at times a slight adenopathy of adjacent glands but the affection usually confines itself to the epiderm. In a few days the affected area scales, scabs form, and the itching becomes more intense which primarily is the cause of the secondary infection. Some cases develop severe constitutional symptoms—high temperature, rising at times to 103° F., headache, gastralgia, epistaxis, and restlessness. I remember one case was suspected of being incipient typhoid fever.

Pathology—This form of the affection would be classed as dermatitis, from the clinical picture in the first stages, but as it rapidly assumes the appearance of an eczema, this difference is the difference of "tweedledum and tweedledee." If it is an eczema followed by pyogenic infection, the microscope would show the usual dilatation of blood-vessels in the papillary layer and edema with infiltration of leucocytes. A differential diagnosis is at times called for in those who work outside of the plant and become infected with ivy poison, but a careful inquiry into the history of the workman will usually reveal the cause. Ivy poison has a selective affinity for the face and hands, and the victim has usually been affected before. The picric acid worker has a characteristic canary yellow color of the hair, face, hands and clothes.

Blood Findings—Dr. Osterhaus was able to examine the blood in twelve cases with extensive lesions, and found marked increase of white cells up to 20,000; the red cells were diminished, and there was considerable crenation and loss of hemoglobin. He suggests periodic blood examinations as a prophylactic measure.

Prophylaxis and Treatment—Because of the great scarcity of workers, Great Britain has studied the methods of prevention a great deal more than this country, and I can do no better than refer to some of them:

The prophylactic measures adopted, for example, in the Royal Arsenal are as follows:

1. All workers are inspected by a medical officer once a week.
2. Special clothing is provided, also veils, respirators, and gauntlet gloves.
3. Employment is alternated fortnightly.
4. Adequate ventilation in workshops is arranged for.
5. Mechanical devices are adopted for preventing dust and getting rid of fumes.
6. Workers are warned against sleeping in the clothing worn at the factory, and advised to have a complete change of clothing on reaching home.
7. Facilities are provided for obtaining suitable and sufficient food at proper intervals. Milk is supplied on the arrival of the workers.
8. Washing of hands and face is insisted upon, before meals and before leaving the factory. Neutral soap and individual towels are provided.

At the Deep Water Point Works there were provided gauntlet rubber gloves and large protective glasses for those who wished them, but there was no compulsion as in the British factories and therefore there were few who did not suffer from the negligence.

Local Treatment—The local treatment is that of severe eczema. The solution that was of greatest value at our plant was the following:

Zinc oxide	24 oz.
Carbolic acid	4 dr.
Glycerin	6 oz.
Aqua calcis	4 pts.
Aqua q. s.	1 gal.

Mop on parts and allow to dry.

In milder cases of tetryl poisoning, application of alum or phenol ointment, after washing with a solution of salicylic acid in alcohol, will usually bring relief.

Prosser White recommends the following lotion to be mopped on freely on the inflamed and itching parts:

Camphor	dr. 2
Carbolic acid	dr. ½
Hydrarg. perchlor.	gr. 15
Alcohol	dr. 6

The bowels should be kept open with saline laxatives, and the diet should be well regulated. When there is a rash covering the most of the body, hot alum baths are very soothing and promote rapid healing. Clean changes of underclothing are obviously necessary. Because of its dangerous affinity for tetryl, solutions of lead should be avoided.

II. TRINITROTOLUENE OR TRITON DERMATITIS.

The nitration of toluene is carried on in closed retorts and the danger of contamination is not from the nitrous fumes, but from exposure to the dust of the finished product.

Etiology—Prosser White, in England, has proved by personal experiment that the irritating ingredient, aided by its fine mechanical subdivision, is trinitrobenzene, and the inflammation is similar to other dermatoconiosis caused by powders of certain other high explosives, e. g., picric acid, tetryl and fulminate of mercury.

There is some evidence of idiosyncrasy on the part of workers with tender skins; but there seems to be no relation between the severity of the dermatitis and the severity of triton intoxication—"although some observers have thought that those susceptible to dermatitis are less likely to have intoxication by triton, which may be a sign that some skins hold triton in combination and have local symptoms, while others pass it on to the blood and have constitutional symptoms."

Symptoms—As in picric acid the first symptoms are itching and burning of exposed parts: hands, fingers and wrists. The earliest rash is a simple erythema consisting of patchy, irregularly shaped, slightly raised areas of redness, varying in size from an inch to an inch and a half in breadth, between which are normal areas of skin. These spots coalesce by spreading at the edges and forming new centers. On exposed parts such as the wrist and forearm, a continuous sheet of redness develops. Moisture from sweat predisposes to vesiculation which, on being scratched becomes infected, producing superficial ulcers. Other parts of the body are affected at times, by powder collected under the nails, similar to the method of propagating furunculosis; occasionally the face and chin are affected. There are recorded cases of exfoliation of the skin of the palm of the hand and peeling of the skin of the wrists.

Prophylaxis—The same methods are followed as in picric acid and tetryl poisoning.

Local Treatment—The skin should first be cleansed with some solvent of triton such as benzol, and then dried carefully. The application of some lotion that is either astringent or mildly antiseptic, followed by an alum or 3% phenol ointment is usually satisfactory.

SUMMARY.

The general rule in regard to these three forms of dermatitis might be: the higher the nitration the more severe the lesion and the more resistant to treatment. The importance of prevention of the dermatitis is shown by the fact, that the primary cause of the severe constitutional symptoms has been demonstrated to be, absorption of the poisonous material by way of the skin. Because of the place that these processes will take in the manufacture of dyes when the present war is ended, the necessity of educating both the employees and the physicians in charge of this work, as to prevention and treatment of those affections seen in the manufacture of high explosives and other by-products of benzol and anilin, should be brought to the attention of those concerned.

The commercial aspect of the prevention of these affections is readily appreciated when considered in the light of the Workmen's Compensation Act: several suits were instituted because of picric acid poisoning and were decided in favor of the plaintiffs.

The importance of this whole subject will be realized by bearing in mind, that one of the significant lessons of the war, learned by the leading manufacturing companies of Great Britain at great cost to production and profits, has been the necessity of constant and careful attention to the health of the employees.

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MEDICAL SUPERVISION OF INDUSTRY.

By Carl E. Roser, of Ann Arbor, Mich.

It is almost unnecessary in this day to call attention to the importance of occupational disease in its relation to the economic activity of society. There was a time, and not long ago, when occupational disease and industrial accidents were considered a necessary part of certain industries, deplorable perhaps, but inevitable, and hence subjects only for the consideration of sentimentalists and visionaries, not of practical business men. As a result the products of such industries were twofold. The mills turned out, for instance, cotton and consumptives, or perhaps consumptives and cotton, and other industries had, as more or less important by-products, such things as damaged kidneys and eyes if not actually broken arms and crushed heads.

Such things could not go on. The price was too high both from the standpoint of the worker and of society in general; for when a worker is disabled his greatest asset is gone and out of his helplessness and misery there arise not only squalor and disease and vice but, more acutely to the point, the necessity of spending money for hospitals and charitable institutions to take care of this form of industrial wreckage. Considerations such as these are apt to carry a peculiar appeal to practical business men and the idea of a thorough investigation of occupational disease became acceptable and its necessity evident for reasons other than those of pure sentiment.

The various investigations brought out some interesting facts among which the actual cost of such conditions was not forgotten. The report of the First National Conference on Industrial Diseases stated that sickness among workers in the United States represented an annual economic loss of three quarters of a billion dollars—a figure whose very magnitude makes it almost incomprehensible. The variety of these illnesses was no less surprising than their prevalence. It had been thought that accidents and poisonings directly traceable to industrial conditions constituted the whole scope of industrial disability; but comprehensive observation and study showed that diseases either directly or indirectly due to industrial conditions embraced almost the whole category of human ailments from flat feet to those psychic derangements that prompt nearly three out of every one hundred shoemakers to commit suicide.* Diseases then of occupational origin began to assume a new significance not less from the standpoint of the general public than from that of the medical profession, for it was plainly evident that practitioners had been treating an astonishingly large number of truly occupational diseases without adequate knowledge of the conditions primarily responsible for them and with no effective effort toward that control which would make new cases from the same source impossible. One of the largest and most important fields of preventive medicine was being ignored, as the hitherto misunderstood and wholly unappreciated increase in the death rate from degenerative diseases testified; but it was not until it was shown that occupational disease actually does come within the scope of preventive medicine and that no occupation is in itself harmful except in that its methods are foolish or vicious that the whole importance of industrial disease became evident. These latter developments are of very recent origin and arise from that broader knowledge of the nature and causes of occupational disease that has come forth from the work of recent investigators.

By definition, occupational diseases are any disease processes that result from the interference of industrial conditions with normal life. Every occupation, whatever its nature, has some features that either directly cause, or indirectly predispose to, industrial disease and the potency of these factors depends on a number of influences. Among these, age was one of the first to be considered, partly because of its essential importance and partly because of the comparative ease with which the widespread interest and understanding necessary to reform could be aroused in the interest of child labor. Obviously a young and growing child is much more susceptible to bad industrial conditions than an adult and the resulting disabilities are apt to be more marked in their immediate consequences as well as in those more remote effects that involve growth and mental development.

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*U. S. Mortality Statistics.

Sex is another factor of almost equal importance. This is rather strikingly shown by a comparison of the percentages of deaths from pulmonary tuberculosis among male and female workers in various industries. The following figures are taken from E. F. McCampbell's "Consumption and Preventable Deaths in American Occupations":

	Per Cent Male	Per Cent Female
Bookkeepers and Accountants	25.5	35.7
Mechanical and Manufacturing Pursuits	15.5	27.4
Salespeople in Stores	15.8	31.1
Teachers, College Professors, etc.	15.0	21.5
Telegraph and Telephone Operators	28.1	43.0
Tobacco and Cigar Factory Operators	24.3	40.5
Stenographers and Typewriters	37.0	38.8
Waiters and Servants	27.6	19.5

These figures show astonishing odds against women workers in most of the pursuits recorded, there being only one, the last, in which there appears a marked reversal of the order. To be sure in some callings the differences are slight, as is shown by the figures for stenographers and typrewriters, but the fact that sex does constitute a predisposing factor to occupational disease in some cases can hardly be doubted.

The influence of strength and general bodily health is of course also of real importance. If a worker is normally of slight strength or is weakened by a disease process past or present, he is evidently more susceptible to the strain of his surroundings and an easy victim of conditions which would in themselves have caused little or no trouble to a normally resistant individual.

Closely connected with the above as predisposing factors are the questions of personal habits and intelligence. The careless ignorant worker may not only be a menace to himself but to his co-workers as well, since it frequently happens that the slovenly slipshod habits or stubborn ignorance of one endangers many perhaps not directly concerned.

These constitute the more important predisposing factors of occupational disease: the actual causes are as varied as the industrial processes that give rise to them and their classification almost as difficult for with the passage of time the list has grown by the addition of factors hitherto but imperfectly understood. Perhaps the most comprehensive classification is that adopted by the Ohio Survey of Occupational Diseases under the direction of E. R. Hayhurst. The so-called health hazards recognized were as follows: Dust, breathed, swallowed and affecting the skin and eyes; dirt, including disorder and demoralizing surroundings; dampness due to water, steam and humidity; dryness; darkness, flickering, glare, etc.; devitalized air including re-breathing, fumes, vapors, room and process ventilation heat; cold and draught, fatigue from laborious work, long hours, monotony, constant strain of eyes and ears, speeding up, etc.; inactivity; high pressures; infections, including venereal diseases; poisons; alcoholism.

Most of these are self-explanatory and of course no different from the factors causing disease anywhere. The secret of their effectiveness lies in the prolonged periods over which they have an opportunity to act, not only as regards successive hours in each day, but successive days and weeks as well, so that the extent of occupational disease is not to be wondered at in spite of the formidable list of pathological conditions represented under this head. A concise grouping of these conditions is that of W. Gilman Thompson ("Reporting of Industrial Diseases," State Department of Health of Maryland).

"Considering pathological conditions only a classification of diseases that may arise from occupational causes may be made as follows:

CLASSIFICATION OF DISEASES.

1. Diseases of the Respiratory System:
    (a)—Due to hard inorganic dusts: bronchitis, emphysema, pneumokoniosis (cirrhosis of the lungs).
    (b)—Due to soft inorganic dusts: rhinitis, coryza, laryngitis, acute and chronic bronchitis, asthma, lung abscess.
    (c)—Associated diseases; tuberculosis, pneumonia, pleurisy.
2. Diseases of the Circulatory System:
    Hypertrophy of the heart, arteriosclerosis, aneurysm, varicose veins, anemia.
3. Diseases of the Kidneys:
    Chronic Bright's Disease (chronic interstitial nephritis).
4. Diseases of the Alimentary System:
    Chronic dyspepsia, chronic gastritis, gastric ulcer, chronic constipation, chronic enteritis.
5. Diseases of the Skin:
    Pruritis, dermatitis, ulcers, eczema, chronic fissures, epithelioma, etc.

6. Diseases of the Nerves and Muscles:
   Paralysis, spasm (tic) tremors, cramp, pain, neuritis, neuralgia, sciatica, muscular atrophy, insomnia, headache, etc.
7. Diseases of the Eye and Ear:
   Conjunctivitis, rhinitis, optic neuritis, deafness, etc.
8. Diseases of the Bones:
   Necrosis of the jaw and nasal septum.

A classification of this sort must of necessity be incomplete, but these together with their secondary complications, a group of psychic disorders and a long list of vague indefinable ailments that can only be regarded as incipient disease are embraced in the term "occupational disease." What these conditions mean is evident and the necessity for their control by proper supervision is also evident.

Medical supervision justifies itself on the grounds of preventive medicine generally. The person is no longer to be found who objects to the erection of a filtration plant for the purification of a polluted water supply and the time is not far off when measures for the prevention of occupational disease will be regarded as of equal importance with those for the control of water-borne or any of the other better known diseases. No economic system can stand the strain that the annual direct and indirect losses from occupational disease puts upon it, for contrary to the prevalent belief supervision is not merely of class benefit. It answers the need of organized society for the prevention of senseless waste and carries its benefits not only for the laborer but for the employer and general public as well. Supervision means health, which is hard-headed economy and good sense from any standpoint.

In order to arrive at some conception of the present status of medical supervision of industry in this country, an inquiry was addressed to the board of health of each state requesting information or references regarding the scope of this form of supervision within the boundaries of that state. The results were surprising. Some answered directly, others referred the request to the department of labor, one turned the matter over to the state historical society, and about one-quarter failed to answer. At the same time, letters were addressed to the medical officers of those corporations that were known to maintain so-called welfare departments with similar requests but with rather disappointing results so that recourse for this phase of the work had partly to be taken to the reports found in library circulation. The work of the national government was followed in the published bulletins of the Department of Health and the Bureau of Labor Statistics. As may be judged from this statement of sources, present supervision was studied under three heads: state, national, and private supervision. Each is in its infancy and as yet effective co-operation has not been established so that consideration must be taken up separately.

The fact that private supervision by single corporations exists at all argues more strongly than any other one fact for the business sense of this form of preventive medicine. Some companies have been engaged in this work a long time because their particular needs were more acute than others. Thus the railroads have always made more or less thorough examinations of their men because of the essential importance of having absolutely dependable employees in such work. In other lines the need was not so evident and the advantages of proper supervision were not recognized until a comparatively late date. However, nearly all the larger corporations now maintain departments for work of this type and all degrees of efficiency and complexity are to be found varying from the simple first-aid cabinet in charge of an exalted office boy to the highly organized staff of company physicians that care for all the illnesses of the workers and their families. A fair number of examples of the latter class are to be found varying more or less to apply to special conditions and in response to different management, but the essential points are very similar. In this respect the work of the Tennessee Coal, Iron and Railroad Company under the direction of Dr. Lloyd Nolandis is remarkable both for its extent and the special conditions which it is designed to meet.

The company is engaged in the operation of coal mines, ore mines, quarries, blast furnaces, and steel plants distributed over a wide territory, though the greater proportion are within a fifteen-mile radius of Birmingham, Ala. About 15,000 workmen are employed in these operations, 34 per cent living in houses owned by the company, so that with their families this force of workers represents a population of approximately 45,000. The welfare work of the company comes under the management of the Department of Health which is closely associated with the Educational Department. For convenience of handling, the department is separated into three divisions, namely, Sanitary, Medical and Welfare. The sanitary division is responsible for the following: Purity of water supplies; care of closets and disposal of fecal matter; collection and disposal of trash and garbage; cleaning and drainage of streets and alleys; supervision of house premises; elimination of mosquitoes; inspection of stables and prompt disposal of manure for fly prevention; isolation and quarantine in cases of contagious or infectious disease; supervision of milk supplies and inspection of commissaries. For this purpose the company is divided into six sanitary districts each with its sanitary inspector who reports to the superintendent. For the work of the Medical division twenty districts are created, each of which is in charge of a district physician. These physicians with their assistants comprise a force of 35 doctors and 15 nurses, all of whom are employed on a full time basis. Their work embraces the following:

- Physical examination of all applicants for employment.
- Physical examination of all school children with frequent inspection of schools.
- Co-operation with the Sanitary division in general health work.
- Care of sick and injured employees and their dependents without regard to the nature or cause of the illness.

Two base hospitals, six smaller hospitals, twelve dispensaries, and a central laboratory are also maintained. The expense of this division is borne partly by the company and partly by the employees through the voluntary contribution of 75 cents a month which entitles them and their dependents to treatment for any possible ailment. The Welfare division has charge of club houses, the conduction of courses in practical housekeeping, supervision of playgrounds, etc. The reason and justification for this elaborate system is well expressed in the words of the superintendent:

"The sober, hardy workman must have properly prepared food, a clean, well-conducted home, and a healthy family . . . . . the sickly workman or the workman with a sickly family is an expensive investment always."

The work being done by this company is not unique. Many, but by no means a majority of the larger corporations, have more or less efficient systems of caring for workmen injured in the direct line of their employment; but, after all, injuries are but a part of the field that supervision should cover and unless the predisposing factors of occupational disease are circumvented and direct causes removed, such systems realize only a fraction of their potential usefulness. The vast majority of places of employment are without the slightest protection against occupational disease and the principles and mechanism of prevention are largely disregarded. Darkness, dust, poor ventilation, and all the other causes of industrial disease flourish unmolested while the managements provide a first-aid cabinet and buy a complacent self-righteousness at the price of a few Safety First placards. Private supervision of the health and physical fitness of employees is progressing rapidly and has been greatly stimulated by the Safety First movement but the time has not yet come for a cessation of effort and the so-called philanthropic welfare work among employees must not in all instances be taken as an effective guarantee of proper industrial conditions. Gymnasiums and ball grounds are not as essential as proper ventilation and its kindred blessings, and we must not be led into supposing that because these self-advertising protestations of an employer's philanthropy exist, other conditions are good. They may be and probably are, but effective industrial disease control means more than these things.

As far as state work is concerned, measures for the prevention of occupational disease have been far overshadowed by those for the prevention of industrial accidents, probably because the consequences of unguarded machinery are much more striking to the layman than those that arise from such things as improper lighting and devitalized air. A crushed arm is a good tangible argument for stringent protection measures, but strained eyes and tubercular lungs are so common as to excite little more than passing notice. Not being so directly traceable to their basic causes, they fail as effective stimuli to the development of proper prevention.

Whatever the explanation, the fact remains that most states are practically without proper occupational disease regulation. As a result of the requests for data on industrial disease regulation in the various states, it became evident that a comparatively large number had done nothing whatever along this line; others apparently had nothing more than loosely enforced laws requiring the reporting of occupational disease; still others had partial regulation and inspection through the department of labor, while a very few had made occupational disease a special study and were developing effective measures for its recognition, control and treatment.

Most of the states altogether without regulation of this type were those in which agriculture was the principal occupation and since the farmer is usually taken as the normal basis of comparison in occupational disease reports, the absence of this kind of regulation cannot be wondered at. Such states do not need legislation of this type badly enough to recognize whatever need does exist.

It seems rather odd that legislation should be passed, as has been done in some states, requiring the reporting of occupational disease without first making comprehensive regulations for its prevention and control. How are such diseases to be intelligently reported if no preliminary work has been done and of what value is such reporting if unaccompanied by other measures? Preventive medicine of this type requires more than mere legislation; study, education, and comprehensive inspection must accompany legislative enactment if anything worth while is to be done.

In the majority of states, occupational disease control or true medical supervision is one of the many functions of the department of labor. The regulations which inspection is designed to enforce have to do mainly with hours of labor, work of women and minors, problems of ordinary sanitation of work rooms and other questions of a like nature; naturally the efficiency of such systems varies in different states. The law of Massachusetts provides that the state board of labor and industries and the industrial accident board, sitting jointly, shall investigate from time to time employments and places of employment within the commonwealth and determine what suitable safety devices or other reasonable means shall be adopted for the prevention of industrial accidents and occupational disease and shall make whatever regulations are necessary to carry their findings into effect. For the enforcement of these regulations, it is further provided that one of the two deputy labor commissioners be especially qualified to supervise the enforcement of those laws under the jurisdiction of the board which relate to the health of persons employed in buildings used for industrial purposes. To this end the work of the ordinary industrial inspectors is supplemented by that of a number of industrial health inspectors who must either be licensed physicians or persons qualified by technical education in matters relating to health and sanitation. The commonwealth is divided into inspection districts for the better enforcement of the provisions of the law, which embrace conditions of employment of women and minors, employment of children, lighting and ventilation, and sanitation of places of employment including tenement work rooms. The inspectors cooperate with the local health officers and physicians wherever possible, the latter in turn being required by law to report all cases of occupational disease coming to their attention. Within the last few years the state has carried on an extensive investigation of the conditions of employment prevalent in the boot and shoe industry during which several new methods of rather wide application have been developed.

Essentially the same type of work is being carried on in New York, Pennsylvania, and other large manufacturing states. New York has industrial inspectors of various grades, including medical inspectors and inspectors of industrial hygiene and home work. The former have to do with conditions of health of persons employed in factories, mercantile establishments, etc., and have special charge of the physical examination and medical supervision of the children employed in them.

Pennsylvania, besides having inspectors with duties similar to the above, has held two conferences on industrial disease and has established an occupational disease clinic in Philadelphia to which all cases of occupational disease are sent for treatment and study. In connection with the work on the conditions of employment of minors, the state has provided for the establishment of continuation schools, attendance upon which is compulsory for minors between the ages of 14 and 16, the minimum time per week spent in such schools being eight hours. Occupational diseases are reported by law in both New York and Pennsylvania.

The report of the occupational disease commission of Illinois and especially the recent survey of occupational disease in Ohio have shown the real importance and scope of this kind of work. Ohio has factory inspection by the department of labor similar to that of other states but in addition has created a special division of the Board of Health known as the Division of Occupational Diseases, which under the direction of Dr. E. R. Hayhurst, has made a state-wide study of all employments and places of employment, using for this purpose a special system of classification developed to cover the subject from all angles. The survey was undertaken with a view to making proper suggestions to the legislature as well as to workers and employers of labor and has been so far successful that its results and methods have pointed the way for similar work in other parts of the country. Aside from the direct achievements in bettered industrial conditions which the survey has been able to effect, the work has been of inestimable value in developing new methods of investigation and has clearly pointed out both the necessity and means of further study and improvement. As a result the exact health conditions of all the various industries and trade processes of the state have been established and more data will be steadily forthcoming from the comprehensive and efficient reporting of occupational disease that has been provided for, as well as from the health inspection now in force. On this basis, rational industrial laws are being and will in the future be made; meanwhile the immediate findings are being made available to practitioners, employers, laborers, and the general public through published bulletins and a thorough educational campaign.

The work of the United States Department of Labor and the Public Health Service has been of a similar character. Investigations have been carried on and bulletins issued dealing with the various phases of occupational disease both as regards the prevalence of special diseases, such as industrial tuberculosis, and the conditions surrounding special groups of workers. This work has been largely responsible for directing the attention of the general public to the importance of industrial conditions in their relation to public health and in emphasizing both the necessity and pointing the way to proper occupational disease control.

The medical supervision of industry in the United States at the present time lacks first of all in completeness. Where it exists at all, only a part of the factors entering into the problem are considered and only a few of the available means of control are in practice. Private supervision in its best form is generally efficient, but of the industries maintaining features of this type only a very small percentage are able to lay claim to anything more than superficial control and the majority are without any protection other than the most obviously necessary appliances for accident prevention prescribed by the department of labor. State supervision is by no means general nor does it in more than one or two states take into account all the causes and predisposing factors of occupational disease. The state organizations themselves, as well as the regulations under which they work, are inadequate to the enormous task that properly confronts them and as long as this is so, there cannot be anything like adequate private supervision, which must depend finally on the state for proper guidance, co-ordination and control, just as the systems of the various states, specialized though they may be to apply to special conditions, must be standardized and at least partially guided by the national government. A thorough, far-reaching medical supervision must be of standard type and it must be co-ordinated in all its branches. How all this is to be effected cannot of course be said, but it must come and now is coming along certain well-defined lines.

Supervision will continue to grow in actual volume as well as efficiency in exact proportion to the spread of the principles of workmen's compensation and social insurance, for under each of these systems industry is made to bear a part of the cost of its own wreckage and it will become a business problem to reduce this wreckage expenditure to the lowest possible figure. To this end, factory conditions will receive as much attention as any other factor contributing to efficiency of production; and careful medical examination at the time of employment and at frequent intervals thereafter will do much not only toward preventing and properly treating occupational disease but also in supplying data upon which proper preventive measures can be based.

The state must guide and co-ordinate this work of the individual corporations and communities, whether it comes into existence voluntarily or through due process of law. Standard methods of investigation as well as standard methods of reporting data must be developed. This widespread significance of occupational disease must be recognized and provided for by law, in that practitioners and hospital managements be required to include an exact occupational history of standard form with the other clinical data of each case. This work together with special investigations and rigid inspection will form the basis of a thorough knowledge of the industrial conditions of each state upon which proper legislation can be built up. The state must therefore on the one hand aid and guide the actual work of supervision and on the other hand must co-ordinate the results obtained and make them most widely effective and available through the necessary educational measures.

These things must constitute the backbone of true supervision, but above all, must be the work of the national government, correlating results, standardizing methods, training workers, making special investigations, and handling problems of interstate significance. This part of the system must grow with the development of widespread supervision of the other types, and like them *will* grow as a direct result of that broader knowledge of economic values that is taking medical supervision out of the realm of sentimentalism into that of sound judgment and good sense.

We know the importance of occupational disease; we know its direct and indirect causes and all its great variety of clinical and social manifestations. We also know the ineffectuality of the present system of regulation. The future holds its secrets, but real control of industrial disease through medical supervision must come, for it is one of the answers to society's growing need for a better, more efficient, and more humane method of doing the world's work. Economic necessity as well as our dawning social consciousness makes its future certain.

THE ADVANTAGES AND DISADVANTAGES OF INDUSTRIAL MEDICINE TO THE EMPLOYEE.

By Ernest C. McGill, Chicago, Ill.

While studying the work of the industrial surgeon and physician in some of the large industries in Chicago, I was struck by the fact that in this work as in so many others there are two sides to be considered; that of the employer and that of the employee or prospective employee.

The fact that the work of the company surgeon has been broadened so much and the number of surgeons so employed has been so greatly increased in the last ten years convinced me that the companies are well satisfied with the work of their medical departments. Then the thought came to me, "How about the employee? What advantage does he derive from this system? Are the employees in favor of or opposed to medical examination and supervision?"

With these questions in mind, I visited the medical departments of some of the largest companies in the city of Chicago, companies that employ thousands of men and women. In addition I studied the reports from the medical departments of some of the large corporations outside of Chicago. Careful inquiry was made as to the advantages and disadvantages of medical examination and supervision to the employee and prospective employee, the percentage of rejections, and the attitude of the employee toward the medical department. Then the leaders of union labor were consulted and their opinions received. Then while working at the Industrial clinic of the Central Free Dispensary at Rush Medical College I interviewed both union and non-union employees and applicants for employment at these different plants.

From the company doctor's point of view the men are indeed greatly benefited by the medical examination and supervision. It was pointed out to me that health is the workingman's great asset. It is necessary to him in order to earn a living. He should not be asked to endanger this health by being required to work beside men who are diseased or mentally deranged.

Medical examination of applicants for employment prevents the introduction and spread of disease. If a contagious disease is found in an applicant he is of course rejected. This is in all fairness to the men already employed. If his condition can be corrected he is advised to consult a physician. After recovery he may return again for examination and if found free from disease he can be employed. Many company surgeons not only recommend treatment to the applicant, but if he is unable to pay for treatment, he is sent to one of the free dispensaries or to a hospital and there treated free or for a very small sum. Here the personal charity of the physician plays a part. The physician by co-operating with free dispensaries, the associated charities, crippled children's societies and so on can direct the attention of these organizations to proper people. The Industrial clinic at Rush Medical College is a busy place on Tuesday and Friday nights and many of the patients have been referred by physicians. In case the applicant has tuberculosis he is referred to the Municipal Tuberculosis Sanitarium.

Examination also prevents applicants from being permitted to do work which on account of their physical condition would prove dangerous to their health or life. For instance, a man with a mitral regurgitation is not accepted for a job requiring heavy lifting, nor is a man with a hernia accepted for such a position. These men may be accepted and put to work at something they can do without injury to themselves. Some companies require that the employee be examined before being transferred to another department to make sure that he can do the work in the new department without injury to himself.

Then again, the examination of applicants for heart pathology and testing of the eye-sight is especially important in the case of railroad engineers on whose fitness depends the lives of not only his fellow employees but perhaps a great number of passengers.

The responsibility of the medical department does not cease with examining an applicant for employment. The company doctor has a big part of the responsibility of keeping that man from becoming ill or injured and of giving him at least first aid if he is ill or injured.

In many companies placards are posted instructing employees in the prevention of disease. In other companies in addition to the placards, lectures are given instructing the employees in personal hygiene and in avoidance of accidents and illness. In most of the companies this work is done in conjunction with a safety first engineer or committee or the welfare department. The doctors analyze the causes of accidents and work with the safety engineer to prevent a repetition of such an accident. In this way the amount of illness and the number of accidents are cut down.

The doctors inspect the plant and suggest improvements in sanitary conditions. Cuspidors, toilets, drinking water facilities are inspected. Light, temperature, ventilation and humidity are carefully looked into and improvements suggested. The personal hygiene of employees is looked after.

In case an employee's home conditions are thought to be unhygienic a visiting nurse may call and very tactfully suggest improvements.

If an employee is found to have a contagious disease he is removed from the plant until he recovers, when he is reinstated. The care of these cases depends upon the length of service of the employee and upon the nature of the disease. One company in particular suspends without pay an employee found with an acute venereal disease. He may be reinstated after recovery. Most companies take care of their old employees, or have means through employees' benefit associations of caring for the ill.

Tuberculosis and other diseases are often detected in employees in the early stages when they can be best treated. In case of tuberculosis, if the employee has been with the company several years many of the companies will place the employee in a sanitarium and pay his expenses during his stay there. His family is taken care of during his illness in case they are destitute. One company at this writing has six cases of tuberculosis in the sanitarium at company's expense. These cases are kept there for from a few months to a year. On recovery they may return to work. In one large mail order house in Chicago the death rate from tuberculosis was reduced from 11% to 1% by the work of medical examination. The percentage of employees infected with tuberculosis was reduced from 4.6% to 0.8%. In over five hundred cases of tuberculosis found in one large company in the course of a few years over one hundred regained their health and are now at work.

Persons who have been employed for a brief period only are treated according to the exigencies of the case. In case of other illness than tuberculosis they are referred to their family physician. Some few companies treat their employee's illness, but most only treat if the employee is destitute. The employee may be referred to a dispensary if suffering from a chronic disease.

Sears Roebuck & Co., on examining over 15,000 old employees during 1914 and 1915, found 27% with definite diseased conditions while a great number of minor defects were found. None were discharged. They were told of their condition; many were given vacations or free hospital or sanitarium care. Some were referred to their family physicians. If they couldn't afford to pay for special care, the company doctors cared for them free of charge. This company has cared for 284 employees with tuberculosis free of charge. A majority of these were treated at sanitariums.

In case an employee through accident or illness develops a condition that makes his present work dangerous for him, his condition is reported to his superintendent and a job suitable to his condition is found for him.

In several of the larger companies where the medical department work has been most developed any illness or accident is required to be reported to the doctor's office at once. By early treatment of small scratches as well as the larger injuries the number of infections and the consequent loss of time have been cut down enormously.

The larger plants have dentists on the medical staff who aid greatly in treatment.

To summarize; the advantages claimed for medical examination of applicants and examination and supervision of employees are:

1. The prevention of introduction and spread of contagious diseases among employees.

2. The prevention of applicant for employment entering work that would be dangerous to one in his physical condition.

3. It puts an employee in a job that is suitable to one in his condition.

4. The prevention of many accidents and much illness by education of the employee and supervision of plant sanitation.

5. Detects disease early when treatment is most efficacious.

Treatment is free by company doctors or dispensary if employee can't afford to pay for special care by his family physician.

6. Accidents, even the slightest scratch are treated early, infection prevented in many cases, and disability and fatalities are cut to a minimum.

7. The time lost by employees on account of illness is greatly cut down.

From the standpoint of the employee.

Labor union leaders were interviewed. These men admit that the question of medical examination and supervision is a much-mooted question in their conventions. They are suspicious and apprehensive of the work of the medical departments. As one man said to me, "The medical examination has not been instituted to benefit the workingman but to aid the company to cut down its losses under the workmen's compensation laws. It means dollars and cents to these companies or they wouldn't maintain these medical departments."

They object to medical examination chiefly on the ground that the employer may take the healthiest and most efficient men and cast out the others. The cast-offs may be able and willing to work but are not given a chance in competition with the more healthy.

In case of scarcity of labor they claim that the large employer with medical inspection fills his shops with labor by making the physical requirements extremely liberal. When labor conditions change the less efficient are culled out by medical examination.

The small employer taking what the large employer refuses gets only men in subnormal physical condition.

The compulsory physical examination is a great infringement of a man's personal liberty. A physical examination especially of women and young girls is a delicate procedure. To be compelled to undergo this examination in order to get a job necessary to life is a degrading thing. A person having submitted to a thing of this kind, having undergone this infringement of his liberty is in a state of mind in which he will suffer further impositions. It saps a man's courage, lowers his spirit. The family history asked by some company doctors is obnoxious.

The labor leaders fear the extension of the medical inspection to the homes of the workers. This they claim will be unbearable.

The above are the opinions of some of the union labor leaders. Organized labor represents a little less than 10% of the industrial labor in the country. Within the unions again are factions. Not all union men think as do these leaders. However, their opinions demand respect. Their arguments deserve analysis. I interviewed men both union and non-union who came from time to time to the Industrial Clinic for examination and treatment. These men all agreed that the medical departments of the large companies were doing a great amount of good for the workingman, but they admitted that it was "pretty tough" for the fellow who was refused work because of an irremediable physical defect.

We know that the men at the head of these large industrial plants are not necessarily brutes. They are not averse to doing good to their fellow man, but they are good business men, men who under stress of competition are doing all in their power to keep down expenses and to make their company show up well in the credit column at the end of the year. We can safely say that the labor leader is right when he says that medical inspection and supervision were not instituted originally to benefit the workingman alone. Many of these medical departments were the direct result of the application of workman's compensation laws in the several states. The companies felt that they must protect themselves from fraudulent claims and reduce the hazard to fellow employees arising from physical defects in workers. They were right in so doing. Dr. Post of the People's Gas Light and Coke Co., in a paper read before the convention of the Illinois Gas Association told of the case of a young man who suffered an injury of the forearm. The injury healed completely, but the young man made claim against the company for a deformity of the elbow. Reference to the record of his physical examination at the time of employment showed that the deformity had existed at that time and had been caused in a definite place and manner sometime previously. Then again, a man who has lost the sight of one eye is refused work by many companies. This is due to the working of the compensation laws in some states, for if the man while at work loses the sight of his remaining eye, the law requires that he be given compensation for total loss of vision.

However, even granting that the medical departments were begun as a protection to the employer, they have developed into a great good to the workman. The employer furthermore is beginning to find that extension of the work of the medical department beyond the stage of simple protection of the company's interests to a friendly concern and aid to the employees pays well in loyalty and efficiency.

That the compulsory physical examination is an infringement on a man's personal liberty may be true, but throughout our whole social system of today the individual is surrendering rights in order that the community as a whole may be better governed, better taken care of. We quarantine our contagious diseases. We may compel an examination of a man before releasing him from quarantine. The examination of an employee tends to prevent the introduction of contagious disease among his fellow employees. In the case of an engineer the examination is certainly a necessary measure to prevent accidents.

There are undoubtedly girls and women who shrink from a physical examination. These cases should be very tactfully handled. Here, the personality of the examining physician is a great factor.

As to the benefits of physical examination itself little need be said. There is no doubt that a physical examination gives information obtainable in no other way as to the diseases and defects peculiar to workers and the influence of an occupation upon the health of the individual. The value of preventive medicine is being realized. The Postal Life Insurance Co. tried periodic examination of policy holders over a period of five years and reduced the mortality 50% among those taking the examination.

There is truth in the objection of the labor leaders that medical inspection casts out men who are able and willing to work. Sears Roebuck and Company during 1914 and 1915 examined 13,764 applicants for work. 19.9% had definite diseased conditions, but only 3.4% of these were rejected. This company rejects a man because of contagious disease or a diseased condition that would make work at the plant detrimental to him. The International Harvester Co. rejects 5 to 6% and The Peoples Gas Light and Coke Co. 6% for reasons the same as those given above. Swift and Co. reject 0.5% applicants on account of contagious diseases. These reasons for rejections are fair. It is only fair to say however that labor is scarce now, and at least one of the companies has been compelled to import negroes from the south to fill its ranks of laborers. It stands to reason that in times of an abundance of labor that though the medical department would maintain the same standards for rejection, that the employment manager would raise his standards so that only the best men physically would get the jobs. Physical examination would become more or less of a competitive examination for a job.

What are we going to do for this 5% or thereabout of men that are rejected? There are three classes into which these men may be divided. 1. Those who are so badly crippled that they are useless in the way of industrial labor. 2. Those men having physical defects that can be remedied by proper treatment. 3. Those having defects that can not be remedied by treatment, but who are able and willing to work and are refused the opportunity.

The first class is the concern of charitable organizations. Small jobs can be secured for them.

For those men in the second class the solution of the problem is comparatively easy. In Chicago, the dispensaries connected with the high grade medical colleges solve the problem for the man who cannot afford to pay for treatment. In other cities there are dispensaries or the associated charities help him. Many doctors treat such cases for nothing or accept only a small fee.

As regards the men in the third class, the loss of an eye does not mean that a man is not able to do a day's work. It means that he can't get a job in some of our large factories that now have medical departments. As more companies adopt physical standards, it will be increasingly difficult for him to get any work. There are men who are below par physically whose condition can not be remedied by treatment, who are able to work, but because of their condition, they are to a certain extent risking their lives by working. No company cares to accept these men as employees.

THESE CASES THAT CANNOT BE IMPROVED BY TREATMENT ARE THE BIG PROBLEM. They want work, not charity. Some provision should be made in our compensation laws for such men to be permitted to sign waivers freeing the employer from responsibility for injury done them on account of their stated physical infirmity. Furthermore, the employee should be protected from unscrupulous employers by having every waiver accompanied by a certificate of physical examination by a doctor other than the company doctor, and a duplicate of each waiver and certificate should be put on file by the employee at the office of the state industrial commission or other body intrusted with the execution of the compensation laws. The employee on changing employers should transfer his waiver.

One labor leader pointed out that although the rejections for employment in the large companies are now based on fair and generous principles, there is nothing to compel the employer to retain these principles. Undoubtedly labor will feel much more at ease if it can pass legislation defining the reasons for which rejections may be made. The enforcement of such legislation would present difficulties.

The First National Conference on Industrial Diseases in 1910 addressed a memorial to the president of the United States in which it was stated that there occurred annually in the United States 13,400,000 cases of illness among workers, involving an economic loss of nearly three-fourths of a billion dollars. Considering the above we can understand the growing sentiment throughout the country for health insurance. Rubinow in his work on Social Insurance says that 3,000,000 people are in American trade union benefit societies, fraternal orders, and casualty companies and expend $17,000,000 yearly on account of insurance against temporary disability.

AMERICAN ASSOCIATION

OF

Industrial Physicians and Surgeons

THIRD ANNUAL MEETING

CHICAGO

June 10th, 1918

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CONSTITUTION AND BY-LAWS OF THE AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

Article I. Name

The name and title of this organization shall be, The American Association of Industrial Physicians and Surgeons.

Article II. Object

The object of this Association shall be to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employees; and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

Article III. Membership

Section 1. Membership in this Association shall be of three classes: (a) active, (b) associate, (c) honorary. Only physicians who are actively engaged in the practice of industrial medicine and surgery, or who are engaged in the investigation of industrial medical problems, shall be eligible to active membership; other physicians shall be eligible to associate membership. Any person who has contributed distinguished service to the objects for which the Association stands shall be eligible to honorary membership. Proposals for honorary membership shall be handed to the Secretary-Treasurer in writing, and must be recommended to the Association by the Board of Directors before they can be elected.

Section 2. Associate and honorary members shall have all the privileges of active members except the privilege of holding office and of voting for officers and directors and for amendments to the constitution and by-laws.

Section 3. Applications for active or associate membership must be made in writing to the Secretary, and must be approved by two active members in good standing before election can take place;

a two-thirds vote of all the members present at any executive session of the Association shall be required to elect to membership. Applications shall not be acted upon by the Association unless they have first been approved by a membership committee of three to be selected by the Board of Directors. Honorary members may be proposed to the Association by the Board of Directors; a two-thirds vote shall be required to elect.

Section 4. The annual dues of active and associate members shall be two dollars per year, and shall be payable in advance on the first day of May of each year. Honorary members shall pay no dues.

Section 5. Any member whose dues are unpaid is not in good standing, and he shall have no vote until his indebtedness is discharged. When the dues of any member become two years in arrears, his membership shall automatically cease.

Section 6. Members may be expelled for cause; provided, that a copy of the charges made against him shall be furnished to him in writing at least one week prior to the meeting at which such action is taken. A majority vote shall rule.

ARTICLE IV. OFFICERS

Section 1. The officers of this Association shall be a President, a First Vice-President, a Second Vice-President, and a Secretary-Treasurer. They shall be elected by the Association and shall serve from the close of the annual meeting at which they are elected until the close of the next annual meeting, and until their successors are elected and installed.

Section 2. The President shall preside at all meetings of the Association and of the Board of Directors and shall perform such other duties as may be directed by the Board of Directors. In the absence of the President the Vice-President shall act in his place.

Section 3. The Secretary-Treasurer shall keep an accurate record of the transactions of all meetings of the Association and of the Board of Directors; shall carry on the correspondence of the Association; shall keep an accurate list of the members; shall receive all moneys belonging to the Association, giving his receipt therefor, and shall pay all just bills against the Association, subject to the approval of the Board of Directors; he shall submit his accounts for audit at the annual meeting, and shall transmit to his successor in office all the funds and properties of the Association remaining in his possession. He shall submit an annual report to the Association in such form as may be determined by the Board of Directors.

ARTICLE V. ADMINISTRATION

Section 1. The affairs of the Association shall be administered by a Board of Directors consisting of the officers and twelve additional directors. The Association at its meeting in Detroit in 1916 shall elect six directors to serve one year, and six to serve two years, and thereafter six directors shall be elected each year to serve for a term of two years. Their term of service shall begin at the end of the annual meeting at which they are elected.

Section 2. The planning of the work of the Association, arrangements for meetings and programs, and for other matters pertaining to the administration of its affairs, shall be vested in the Board of Directors, except as otherwise herein expressly provided. The President of the Association shall serve as Chairman of the Board. The Board shall make its own rules and shall appoint such committees for carrying out the work as it shall deem necessary and advisable.

Section 3. The Board of Directors shall have power to fill vacancies among the officers and directors to serve until the next annual meeting of the Association, or until their successors are chosen and installed.

Five directors shall constitute a quorum.

Section 4. All resolutions shall be referred to the appropriate committees for recommendation before reference to the general body.

ARTICLE VI. MEETINGS

Section 1. The annual meeting of the Association shall be held at the place of and during the week of the meeting of the American Medical Association, but the sessions shall be held at such hours as not to conflict with the sessions of the American Medical Association.

Twenty members shall constitute a quorum.

Section 2. Other meetings may be called by the Board of Directors.

Section 3. Notice of all meetings shall be sent to the members by the Secretary at least thirty days in advance of the date set for them.

Section 4. Each member of the Board of Directors shall be notified in writing by the Secretary-Treasurer at least two weeks in advance, as to time, place, and purpose of meeting of the Board of Directors.

ARTICLE VII. ELECTION OF OFFICERS

Section 1. Nominations for officers and directors shall be made by a Nominating Committee of three active members to be appointed by the President at the first executive session of any annual meeting. Provided, this article shall not be construed to deprive any member of his right to make nominations.

Section 2. Election of officers shall take place at the last executive session of the annual meeting.

Section 3. In the event of there being competitive nominations for any office, election shall be by ballot, and a majority of all votes cast shall be required to elect. If after two ballots there shall be no election, all but the two candidates receiving the highest number of votes shall be dropped from the ballot and the voting confined to the two so designated.

Article VIII. Local Councils

The Secretary-Treasurer shall have the power to take the necessary steps for the establishment of local or district branches of this Association.

Article IX. Amendments

This constitution and by-laws may be amended by a two-thirds vote of the members present and voting at any annual meeting of the Association; provided, that the call for such meeting shall have specified the particular amendment which is to be acted upon, and provided also that no amendment shall be acted upon which has not been so specified.

MINUTES OF THE THIRD ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

Industrial Physicians and Surgeons

CHICAGO, JUNE 10, 1918

The meeting was called to order at 10:20 a. m. by the First Vice-President, Dr. Francis D. Patterson, of Harrisburg, Pa.

DR. PATTERSON: The Third Annual Meeting of the American Association of Industrial Physicians and Surgeons will please come to order. Our President, Dr. J. W. Schereschewsky, we are advised, is on his way here from Washington, and when he arrives he will take the Chair. In the meantime, there are just one or two necessary things to attend to; so we will proceed with the business of the Annual Meeting.

It seems to me that there never was a time when there was so much necessity for organization on the part of the surgeons engaged in taking care of the health and treating the accidents of the men employed on the firing line on this side of the water. We have seen a demand on the part of the Federal Government and our Allies upon American industry that none of us ever dreamed would occur. We have seen plants of tremendous size increase over night, almost, and their pay rolls run up to many thousands of employees. We have seen many new plants established all over the United States for the manufacture of the vital munitions of war; and with this tremendous increase in the industrial army there has come the need for more care on the part of our industrial physicians, so that we might keep a steady line of supplies going across the bridge of ships to France.

We shall have the pleasure, later, of hearing the annual address of the President; and this being our business meeting, I will first call on our Secretary, Col. Harry E. Mock of the United States Army, to report on his activities for the Association.

Lt. Col. Harry E. Mock, Washington, D. C.: I am going to dispense with a formal report as Secretary, because the hour is so late and the program so extensive. We have become so popular in three years that we have more speakers for our program than we can possibly take care of, and we must get through this morning so as to begin promptly at two this afternoon to take care of them.

This afternoon's program includes men who have become noted in work closely related to industrial medicine and surgery. They are laymen, but are one of us, because they are physicians to society. This evening, at the banquet, we expect to have pictures from France, that have never been shown before, on Reconstruction. They unfold lessons applicable to the industrial cripple, and it behooves every one of us to see them.

The Society has grown until we have three hundred and sixty active members. Three years ago, at Detroit, when we started, we had before the meeting began, and during the meeting, about seventy-five. It grew within six weeks to one hundred and twenty-five; and since then we have increased to the present number. Several of our members are being carried on the inactive list until after the war.

During the year we have lost one member by death. A year ago, as you recall, we also reported the loss of one member by death. Our last deceased member is Dr. John W. Luther, of the New Jersey Zinc Company, who died November 1, 1917. The Resolutions Committee will undoubtedly take appropriate action on this.

The Treasurer's Report will come in after the Auditing Committee has gone over Miss Pauline Gunther's report. Our Association owes Miss Gunther a vote of thanks for the way in which she has conducted the business during my absence in the Army.

The formal report will be published in the proceedings of the meeting, and I wish to be relieved of submitting it at this time, for the reasons given.

TREASURER'S REPORT

June 4, 1917, to June 10, 1918

Receipts

Balance on hand June 4, 1917	$ 16.62
Dues collected, 1917-1918	646.00
Banquet, 1917	111.00
Check for prize	100.00
	$873.62

Disbursements

Printing, stationery and postage	$271.60
Second Annual Meeting and Banquet, 1917	326.00
Assistant Secretary	156.00
Prize for Thesis	100.00
Dues overpaid and checks returned	6.00
Incidentals	26.69
Third Annual Meeting, 1918—badges	12.25
	$898.54
	873.62
Deficit	$ 24.92

Dr. Patterson: The next will be the report of the Prize Committee. As you remember, at our first meeting in Detroit, three years ago, there was given to our Association a prize of one hundred dollars, to be awarded annually to an undergraduate in any Class "A" Medical College in this country, for the best thesis upon a subject related to industrial medicine or surgery. Your President, Dr. Schereschewsky, appointed as the Prize Committee this year, Dr. Alice Hamilton, U. S. Department of Labor Statistics; Dr. Alfred Stengel, Professor of Medicine in the University of Pennsylvania, and myself. It is a matter of extreme gratification to all of us that there were submitted, in competition for this prize, eight theses. These theses were as follows:

(1) The Responsibility of the Industrial Surgeon with Regard to the Treatment of Fractures, by Russel S. Ferguson, A. B., a registered student at New York University and Bellevue College of Medicine, New York City.

(2) Industrial Fatigue, by A. L. Barbrow, Jefferson Medical College, Philadelphia, Pa.

(3) Overlifting—A Machine-Shop Occupational Hazard, by Charles A. Rietz, University of California.

(4) Industrial Medicine, by Lloyd H. Ziegler, Indiana University School of Medicine.

(5) Chronic Degenerative Diseases as Field for Attack by the Industrial Hygienist, by Emmanuel B. Funk, Rush Medical College, Chicago.

(6) Unsatisfactory Results Following Non-Infected Finger Injuries in Industrial Accidents, With Special Reference to Amputations, by G. F. Helsley, Medical School of Stamford University.

(7) Orthopedics as the Solution of the Problem of the Industrial Cripple, by A. Moncrieff Carr, University of Pennsylvania.

(8) The Medical Department Organization of Methods Obtained in and Results Obtained By a Medical Department of a Factory Employing 30,000 Men, by C. O. Hollinger, Detroit College of Medicine.

Dr. Patterson: Due to the fact that Dr. Hamilton was constantly traveling about the country, engaged in work for the Government, we found it impossible to reach her and turn the theses over to her for a review; but both Dr. Stengel and myself feel that Dr. Hamilton would have been glad to endorse the judgment that we have made. After a careful reading and conference on the subject of these theses, your committee, therefore, takes great pleasure in announcing that the annual prize of one hundred dollars is awarded to Mr. R. S. Ferguson, for his thesis, "The Responsibility of the Industrial Physician with Regard to the Treatment of Fractures,'' and that honorable mention is given to the thesis on the subject of ''Industrial Fatigue,'' by Mr. A. L. Barbrow. We also recommend to the Society that both theses be printed in the annual report of our meeting.

We are extremely fortunate, because today we have with us one of the most distinguished medical men of Great Britain, who has come across the water in order to bring the hand of good fellowship from his colleagues throughout the British Isles to those of us located on the borders of North America; and it is going to be our very great privilege this morning to have the pleasure and honor of hearing an address by Sir James Mackenzie. I take pleasure in introducing him to you, and ask that you give him a rising welcome.

ADDRESS OF SIR JAMES MACKENZIE, M. D., LONDON, ENGLAND

It is almost like a piece of impertinence for me to "butt in" at a meeting like this; but there is represented here a section of the community to which I have belonged, and I gather that this more nearly approaches my ideal of what a medical body should consist of than any other. I have offered my services because I have had considerable experience in the matters with which you have to deal. The greater part of my life—thirty years, at all events—was spent in an industrial community, in which I was brought into intimate contact with all forms of industrial diseases and accidents. While I have no doubt that your program, as I heard it read yesterday, is a perfectly correct one, and, carried out, one that will be of the very greatest benefit, yet there is something beyond, something which you can do—something in fact, which you are the only people who can do—for the advancement of medicine as a whole, and not merely dealing with this limited question of industrial disease. On that account I have come to lay before you some of the views forced on me by my work in general practice.

I would like to say that it has been a great distress to me for many years to see how medicine is being diverted out of its true and proper channels. Medicine, like all other sciences, is evolved from a stage of darkness in which superstition and credulity prevail. Go back to the history of astronomy or chemistry, and you find a stage in which astrologers and alchemists flourished. These sciences are now accurate sciences, but medicine has not yet reached that stage. It is back where chemistry and astronomy were, say five hundred years ago. We know perfectly well how much there is of credulity and superstition in even our most recent teaching. Even in this country, you, with your new schools, are putting the children into schools like those existing in the dark ages. You have learned from European nations certain lines of teaching, and have adopted and modified them; but if you take from the continent the torch of light, you also bring with it the shadow of superstition. Although you think it is clearest science, it is often tinged by some shadow that you do not realize. The fount of knowledge is tainted at the very source.

Is medicine progressing along the right path? In the past forty years, what I call "laboratorism" has dominated medicine completely. Now if any man has anything the matter with him, he is supposed to be examined by laboratory methods; and the physician wrings his hands and says, "Clinical medicine can make no advance until the laboratory gives us some new methods." I have heard some of our greatest physicians say that clinical medicine has made its extreme of advance until laboratory methods have been improved. I say, medicine has not been studied scientifically: a beginning has not been made. This may seem an extravagant statement; but when you look closely, you will see that it is perfectly true.

When I come to a town such as this or any other abroad, in France, in Italy, or in Germany, I am always taken to the pathological laboratory and shown dead specimens with wonderful staining; or I am taken to the bacteriological laboratory and shown the growth of different microbes on different foods; or I am taken to the ward, and shown the signs of disease with x-ray photographs of the different complaints. Now, if I say I want to see these diseases, not at this stage, but in the very early stage, when they first begin their effect, they say, "No one knows anything about that." It is when the disease has made the man hopelessly ill that they study it with a minuteness and care that leaves nothing to be desired; but in the beginning, when the disease is curable, nothing is done, or what is done is left in the hands of whom? Look at the out-patient department, when the patients are in the early stages of disease, when the disease is most difficult to detect, when it requires great knowledge to perceive it, and when it is most hopeful for treatment; and who has charge of it? The youth without any knowledge. Time after time I have sat in the out-patient department and seen a man come up and say, "I am ill." They say, "What is the matter?" Then they lock him over, see no physical sign, give him a bottle of medicine, and tell him to come back later. When he develops a physical sign, he is sent to the ward and treated by wonderful laboratory methods, until the disease ceases to interest them; but there have been no steps taken to study the early stages of the disease.

Now how is it that you industrial physicians come into this matter? I was educated at Edinburgh University, where they do the work very thoroughly according to present theories. I went into general practice, but the cases that I saw were not the cases I had seen in hospital practice. My patients, nine or ten, came with vague complaints. I could not make out what was the matter, and thought this due to my own ignorance, and that it was because I did not understand the complaints; but I imagined that if my teacher had been there, he would have been able to tell me what was wrong. Consequently, I looked around and tried to improve myself; and it gradually dawned on me that the knowledge that we want, as general practitioners, does not exist. As my studies went on, I found that we were ignorant of the simplest elements connected with disease. For instance, disease is made manifest to us by the presence of symptoms. This is the only way that we have to detect it. When you come to the study of symptoms, you discover that there is not a single symptom which the body can give rise to that we know thoroughly and scientifically, and know the mechanism of its production and the influence that it has on the man's future. This may seem to be an extreme statement. You say, "Has not every medical book got page on page of symptoms? Are there not big text books written, full of symptoms?" That is true; but the symptoms as described at present are so chaotic that it is impossible for anyone to find out by the study of books what meaning a given symptom has.

Take this one fact: We know that the stethoscope has been in use for a hundred years. There is no man here who will not say that he knows how to auscultate the heart. He well knows, when he hears a murmur, whether it is the first or second sound, and whether it is diastolic or systolic. He knows how it is propagated, and how it is sent in this or the other direction. But if anyone goes into practice and comes across a man with a murmur, what is going to happen to that man? I do not know. You do not know. You take your text-book and go to the library, and try to find out; but there is no word in any of the books as to what is going to happen. When you buy a text-book, you think you have the latest knowledge. A man comes to you with a complaint of an irregular heart and says, "What is going to happen to me?" I do not know," you say, "but here is a book; we will see." Do you think you will get the information? No. It does not exist. That occurs with every symptom. I will give you an instance in support of this.

When I was laying down these views to a friend of mine, who had been a most brilliant student at college, he said, "It is true. When I first went into practice, I was called to see a man who was ill. I said to his wife, 'Your husband has pleurisy.' She said, 'When is my man going to be fit for his work?' "That woman had the key of philosophy that is missed by every man. He said, "I was stumped. It had never been hinted to me that this was a question likely to be asked." Yet that is the question that you, as industrial physicians are asked every day. There is a question called prognosis, which I call assessing the value regarding the man's future. It is a science of the first importance in every respect, and yet the very first step has not been taken to find out how that portion of medicine should be studied.

We find, for instance, in every disease, that there is always a chapter on prognosis; but it is all camouflage. There is no such thing known as prognosis. There is not even a writer that I have discovered who has ever learned how to assess the value of one single symptom, which is very necessary. Look what it means. For instance, what do we know of the early stages of consumption? One man says, "I know that if I give tuberculin and get a reaction, that is the first stage;" or, "I take an X-ray and get a shadow, and I see what is going to happen." They say, "We sent him to a sanatorium and he recovered;" but we know that if you catch the men in the early stages, ninety-nine percent of them would recover without treatment. This is not the essential thing; it is an incident. Its importance we cannot estimate, yet it is taken as a guide to treatment. To estimate what is going to happen to a man who shows the tuberculin reaction or a shadow in the lung, the first step has not been taken.

Then there is the question of appendicitis. You might say that you cannot tell an American audience anything about appendicitis, because Americans were the first to call attention to the disease. The surgeon says, "Have the appendix out, because the greater proportion of those with appendicitis do badly." The physician says, "Wait; because some get well." I say, "What proportion?" They do not know. The surgeon says, "There is nothing to tell whether there is danger or not." I say, "What are you afraid of?" He says, "I am afraid of appendiceal abscess formation or gangrene." "Well, then, do the symptoms present foreshadow any of these?" He says, "That cannot be told." I say, "Are you sure?" "Yes," he says. Now, when you come to analyze these symptoms, you see that there is not a surgeon who knows anything about them. One symptom is pain. Does anyone know anything about that? One great authority says he knows. I say, "What is it?" He says, "The pain is diffuse." I say, "What do you mean by diffuse? Spread all over? Pain is always localized, only you are too ignorant to make it out. Your idea of diffuse pain is a confession of ignorance, because you have not studied it; for when pain arises it is due to definite physical changes. And the fact of where the pain is you do not know."

Then, from another point of view, if you take an organ, such as an appendix, a colon, a piece of a bowel, the liver, or the gall bladder, you may scratch it, burn it, or tear it, and no sensation is produced. But watch! The surgeon and physician call you and say, "When we examine the belly, we find a tender appendix, colon or gall bladder." Everyone accepts this as being an accurate observation; but if I took the chairman's hand and pressed it over the ink bottle until it hurt him, and said, "What a tender ink bottle," you would think it ridiculous! But that is what the surgeon does. He takes an organ that is incapable of sensation, and says that the pain elicited is in the organ, instead of investigating to find where the sensitive tissues are.

Then, take McBurney's point. Has anyone taken the trouble to see what tissues were tender when pain has been produced at McBurney's point? It is necessary to find out first what tissues are capable of giving off the pain. That first step has never been taken. We have never been taught the first step in recognizing the symptom that is of the greatest importance to all humanity. You say that if you recognize the fact that these tissues of which I speak are not capable of giving rise to such pain, we do know that the pain does arise from stimulation of these organs. It may occur to you, then, that there is some peculiar thing in the production of pain in these cases. There must be something underlying the production of pain in viscera that is different from this production in the body wall. Then there is something for the surgeon to find out and correlate with the diseased state, and thereby get a value of the appendicitis—whether it is going to lead to danger or not.

I only mention these things to show you what assessing the value of symptoms means, and to show that we have not taken the first step to differentiate one symptom with sufficient clearness to know its meaning. Where that applies to you folks is this:

There is no use in asking the laboratory man to do anything towards prognosis. A pathologist cannot tell, a bacteriologist cannot, and a surgeon cannot; because, poor fellow, he sees the thing only at the end of a long illness. I think you know that the successful surgeon is an emblem of the disgrace of the physician, because the physician hangs on to the case until too late, and the surgeon steps in and remedies his defect. The physician cannot help us, because he is more or less dependent on the laboratory or hospital record. He never sees the early cases. I was pointing this out to one of my friends, who as an out-patient physician, seeing thousands of cases yearly, knows that it is true. I said, "You were never taught how to examine a patient to see what his symptoms mean. If men like you are incapable of teaching us prognosis, the question is, Who is able to?"

The industrial physician is the only man who has the opportunity to follow the cases from the beginning, through all the different stages, to the end. He is the only man who can throw light on a field of medicine which my object is to tell you is absolutely necessary for the progress of medical knowledge.

In order to bring this before you, I will tell you how it arose in my mind. Shortly after graduating, I attended a woman in confinement, who suffered from mitral stenosis, and whose heart went to pieces; so that when she started in labor, she got dropsical, and died in labor, after thirty-six hours of great suffering. I thought that if I had known my work better, she would not have suffered in this way; so I began to read up concerning the danger of disease of the heart as a complication of pregnancy. That was about thirty-five years ago. The literature I found very unsatisfactory. There was a book published in 1876 by A. McDonald of Edinburgh, who gave the usual statistics from hospitals of how many got this and that disease, and how many died. Now you consider the question, those of you in general practice. Often you will have a woman who suffers from some heart affection consult you as to whether she will be able to undergo pregnancy. You can see the importance of it. It is a question that comes before me frequently in London. It is one that every general practitioner has to face time and again. Its importance to the woman, the husband, and the children is so great that no question requires greater consideration. Just before I left London, I went to the library to look up the most recent books on this subject. I looked at the things most physicians get, and found not one word on the subject. The physician, not knowing, does not question it. I turned to obstetric writers, and found a series of a dozen books by young obstetric physicians. After I had finished these, I was worse off than after seeing the book by McDonald, written so many years ago. The statistics from Guy's Hospital were given; so many had this or that, and so many died—the usual information; nothing bearing on the question of whether a woman with heart disease is capable of having a child or not. That represents the progress of fifty years under the present system.

At the time of my first case I thought that as there did not seem to be much light on the subject, I would try myself to find out something. Being a young man, I thought I would begin to make observations on the hearts of women. It is a great blessing that I was cursed with a constitution that could not stand tobacco or alcohol—unless one can, to sit all night with a confinement case is a weary job. I could not drink or smoke, so I studied my patients. I measured the times the pains came, and how long they lasted; I took the pulse before and after the pains, and made elaborate notes. I also noted other symptoms, and made notes of them. When a young girl came to consult me about her heart, I would make notes at that time; and when she got married, I would make notes then and for years afterwards. Thus I acquired an enormous accumulation of material, and began to sort and analyze it. I found changes in the size and shape of the heart, and found murmurs that appeared and disappeared. The veins in the neck would become distended and pulsate. What did these things mean? I did not know. I went to a library and ransacked the books, and could not find out. I said to myself, "What do you fear?" The answer is very simple; we fear heart failure. Well, what is heart failure? Anyone could say, "The heart fails to maintain efficient circulation." How does a failing circulation show itself? Of course, they say that a failing heart is shown by dropsy and an enlarged liver; but people die without these things. That is the termination, but how does it manifest itself in the beginning? I could find no answer at all to these simple questions.

I remember that, five or six years ago, there came to work with me in the London Hospital, a Canadian, Dr. Andrews Gordon, of Toronto, who has since died. I said, "We will try to find out what heart failure means; but before we begin, go to the library and find what the conception of various authors is." You all know what I mean—whether a heart is going to fail or not. After three months' study, he said, "I cannot get a single idea from anyone as to what is meant by heart failure." I said, "I knew you would not; but here is a case of irregular heart. Is this the sign of heart failure?" There was no answer.

This is not an English question. It is an American question, and a universal question. I remember, for instance, an incident of this sort: A man, I think from Winnipeg, discovered that something was wrong with his heart. He consulted his local doctor, who puttered with him a few months and then sent him to a great city called Chicago. He was under treatment here for a month. Then they sent him to New York. He was there a month, and they said, "Go to Nauheim." On board the ship, they told him to go and see me. He came, and as soon as he sat down, he did that. (Illustrated patient feeling his own pulse.) He was looking out for it. I said, "What is your business at Winnipeg?" He told me. I said, "Take the first ship back, and attend to it, and never feel your pulse again." He wrote me that he took my advice. This was eight years ago. If he had gone to Nauheim—well, I think that you Americans are to be blamed, because you have given the Germans a swell head. I used to hear of the wonderful cures there, and I went there eighteen years ago and found cart loads of wealthy men there being "cured." If there is one humbug on the face of the earth it is Nauheim. I never was so astonished as I was at the standardized humbug I saw there. I said, "Show me the men you are curing;" and they showed me neurotic men who had nothing the matter with their hearts. They showed me a little girl, and said, "She has an irregular heart; she fainted three months ago." I told them that is the sort of child I send out to play in the fields. They said that the wonderful cure must be due to radium contact. I went from one place to another, to see who did get better from lying in soda water or carbonic acid water. There is no cure. It is a pure game of bluff, neither more nor less. They had a following in London, because there is money in the job, you know. A man would come to me and say, "Examine me." I would do so and say, "There is nothing the matter." He would say, "I was told that should I drop a handkerchief, my wife must pick it up; and I have to go to Nauheim. They want one hundred guineas." I said, "There is nothing the matter. You can run down the street, and nothing will happen."

On one occasion, a youth was brought to me who had something the matter with his nose. The surgeon felt his pulse, and said, "Your heart is bad. You must go to a heart man." He went, and the heart man said, "Yes, your heart is very bad." His people were telegraphed for, and they came down in a great state of mind. The great authority said, " It is an enormously dilated heart. We have a new method of finding out the size. Then, of course, he has irregularity. He must be treated at once." They said, "This is a new idea to us. Suppose we go and see Dr. Mackenzie." I said, "Tell the boy to strip. Where is the apex beat?" The doctor said, "It is here." I said, "You cannot get the apex beat there, and the dullness there." I then said to the boy, "You run away home and enjoy yourself." He came to me a year later. He was going to enter the Scots Guards. He passed, and became a soldier; and he does his work all right. He did not need Nauheim.

How did this stupid Nauheim craze arise? Because we do not know the meaning of prognosis. We can only know by a careful study of symptoms. In your notes of cases, do what I have found after much tribulation to be necessary: make careful notes of every symptom, however inconsequent it may seem. Even if you do not understand what it means, make a note of it. If you find a patient with an irregular heart, describe it carefully. If you will make a collection of irregular hearts, you will not go far before you find that there are a great variety of them.

Going back to 1890, when Broadbent published his book on irregular pulse, you will find things described there in an indefinite, vague manner, differentiation being based on no natural affinities. So I had to proceed to differentiate one form of irregularity from another; because you can see that if you are going to study the prognosis of any bodily symptom, you must separate that from others resembling it. It took me a long time, but I found I had to take a record of the simple pulsation of a radial pulse. It was then that I found that the first attempt at scientific differentiation was made by that method. If any of you take up original investigation, I cannot tell you with what pleasure you will discover a new future in medicine. I remember yet the woman from whom I was able to get a radial tracing in which the beating occurred, then a pause, and then the beating went on, while all the time the auricle was beating regularly. Then it was that I first discovered that the ventricle could beat independently of the auricle. That led to the great expansion of the study of arrythmia that has taken place since. It is characteristic of the conservatism of England that no one would publish my papers at first. It was only because I held a college position that someone who was short of material, published my paper; and he was taken to task by a Fellow of the Royal Society, who said, "You have made a mess of your journal, because you have let that Mackenzie write an article for you. No one knows who he is."

It is one of the bad elements in our teaching today, that physiology is divorced from practical medicine. This is a point that I want to bring to your attention strongly. Irregularity has been studied very particularly. After I had done it, my friend in Ann Arbor took it up; and later, others, including Hering. Knowledge of it is general. It does not belong to one individual more than another. But if you were to ask why it is that what little honor has been given me was given,—why, for instance, I was made a Fellow of the Royal Society—they would say that it was because I introduced laboratory methods into clinical medicine. That is all nonsense. The least thing I did was these mechanical toys. I remember that Lister cursed the spray. He said, "I think it is necessary, but I will do anything to get rid of it." But today, they all say that Lister was the man who invented the spray, as they say that I invented the polygraph. That was the least thing that I did. The invention was only to enable me to get a clear differentiation of one thing. The work that I did does not appeal to one out of a thousand physicians and surgeons. No laboratory men, pathologists, or physiologists, can understand what I was doing; that is, trying to find out the meaning of symptoms, to answer the questions I had put to myself in the beginning: "What is going to happen to this man who has this irregularity, what will happen to this poor woman with an irregular heart." I would go down daily and attend a woman in confinement, to find out how a woman with an irregular heart would go through a pregnancy. If I found a working man with an irregular heart, I would have him come and see me once a month, and keep records. If a man with an irregular heart got pneumonia, I would attend him, to see what would happen to him. In that way, I differentiated the irregularity of no moment from those of serious moment. Many were found to be of purely physiological origin. I had to begin to reconstruct the science of prognosis, to know how to make a prognosis; and that science has not yet entered on its elementary stage. That is why I am appealing to you folks, because it is to you that the future of medicine must look to find out the value of symptoms.

When your patients come to you complaining of this or that pain, with an indefinite illness, you should make a careful note of all the symptoms that you are able to detect. Keep in contact with them as many times as you can. Then you will begin critically to see the meaning of the early symptom. For instance, in my early days, I had an enormous experience with gastric ulcer. Many complained of anemia, which we called chlorosis. Many give Blaud's pills to these patients, and think they cure them. Later, however, they come with hemorrhage and evidences of gastric ulcer. Then I said, "Here is the beginning of gastric ulcer. Is there anything earlier still?"

Take consumption: We do not know what is the earliest stage. There is something behind the tubercle bacillus. It has always been to me a question, What is this something behind? The bacteriologists can only see a very limited portion of disease and they are beginning now to come out of the laboratories to treat people. This is the sort of thing that happens: A man gets a suppurative infection of the pharynges. He goes to a bacteriologist, who cultivates a streptococcus, makes a vaccine, and proceeds to inject it into the man. After many months' treatment, the man is no better. He goes to a general practitioner, who looks and says, "You have scabies," and cures him in a week. I told that story to a friend of mine who is in charge of a convalescent camp, and he said, "I know thirty or forty instances in which that has happened." There is the point of accurate diagnosis preceding treatment. In consumption, is there not a scabies, or something like that, behind, which allows a man to get consumption? We know that the large bulk of the community is affected, at one time or another, with tubercular infection; but that only one, here and there, develops consumption. I find that every one of these patients has been under treatment for something, for years beforehand. Most had been treated for gastric ulcer. Then they were treated for consumption in a sanitarium, and died. If I had been capable of treating the gastric ulcer or had handed it over to the surgeon in time,—because it was the gastric ulcer that needed treatment, and not the consumption, just the same as it was the scabies—these patients might have been saved.

My purpose today in speaking is not to show you how the thing could be done, because that would take too much time, but to arouse your minds to the fact that there is a problem. Until you know that there is a problem, you will not try to solve it. The theologian says that a man is not fit for amendment until he becomes conscious of sin.

As to the question of how the problem can be tackled, I do not know whether I can convey the idea clearly to your minds or not. There is needed a new outlook on medicine, a new regeneration in medicine; and if we are content to go on in the old methods, that will never come. I have tried to get my brethren on the other side of the water to see the point, and I cannot get anyone to realize it; so much so that one man said that I was like the insane man who thinks that he himself is the only sane man in the whole world. But if I am mad, there is a method in my madness; because I am so convinced of the need of this.

I am not saying anything against laboratory methods—they are important in themselves, but I told Dr. William Welch that he had a most pernicious influence on medicine, as I told Sir Amrath Wright. The laboratory man—pathologist, bacteriologist, etc., should be the servant of the general surgeon or general practitioner. Instead of being servants, they have raised themselves so high as to dominate the surgeon and general physician, and direct attention away from the only necessities of medicine. To show that I have the courage of my convictions—up to three months ago, I had in London what probably every physician deems the most desirable thing, a large consulting practice in London; but

I could not get these ideas worked out; and I said to myself, "If I stay here, I shall never get them worked out;" so I shut the office and went to St. Andrews, and took up the work of a general practitioner. I was enjoying this rest, when the call came for me to come to America. I did not want to do it. I had no work to do there. But I thought it was my duty to come, and I have given up my work, to do something if possible, toward laying the foundations of a new conception of medicine that is actually called for.

Here is a war matter. The difficulties are these: At the first outbreak of war, there was a demand for recruits; and they came rushing in such numbers that the authorities could not cope with them. Recruiting was stopped then for a time. Then there came a time when conscription was called for, not only of the healthy, but of the impaired. I want you to mark that: *Of the impaired.* Now you men engaged in industrial practice know that the most difficult thing you have to do is to say what amount of work a man is fit for. A man engaged in this work for thirty years, like myself, realizes your difficulty. What our authorities did,—our army authorities, who never had anything to do with a sick man except when he broke down—was to put the men in different grades according to the amount of work they were capable of doing, thinking thus to settle the matter. That is, they assumed a knowledge that they did not possess. No man had that knowledge; but when I called their attention to it, it did no good. What was the result? Disaster! There was almost a revolution. So frequent and numerous and glaring were the mistakes made that men manifestly unfit who were put into different grades, broke down and died. For instance, my gardener, a man with an emphysematous chest, was put in class B, to labor at home, and was started to work as a navvy. He was exposed to inclement weather, and got a cold. He was told that he was shamming, and would be punished if he reported sick again. He finally got into the hospital, and was sick many months. He then was invalided out with a pension. That is what is meant by prognosis. At this crisis of the world's history when the nation calls on us for the knowledge that we pretend to have, we are found wanting, and cover it up with all sorts of camouflage.

These are the objects that I wanted to impress in your work; because men watching individuals as you do, and taking notes, will find out the meaning of symptoms. Follow out your own plan. The plan I give you may be right or wrong, but one that you develop yourself may be better. It is to you that I look for the saving of medicine, and I trust that these few words may encourage you to take up your work with a will.

Dr. Patterson: I am very sure that it needs no words of mine to emphasize to Sir James the verdict of appreciation. This Association owes to him our thanks for his most admirable address.

The following Committees are appointed:

Committee on Nominations of Officers: Drs. Selby, Post, and Lauffer, chairman.

Auditing Committee: Drs. Crowder, Ford, and Harvey.

Resolutions Committee: Captain Lanza, chairman, Drs. Hourigan and Cameron.

The Resolutions Committee and the Nominating Committee are requested to withdraw immediately, so as to be able to make a report at the conclusion of the next speaker's address. The Auditing Committee will hold a Session later in the day.

The following amendments in the Constitution and By-Laws are submitted to you for such action as you suggest:

1. "BE IT RESOLVED THAT SECTION 4 of Article III be amended to read as follows:

The annual dues of active and associate members shall be two dollars per year, and shall be payable in advance on the first day of May each year. Honorary members shall pay no dues."

All those in favor of the adoption of this Amendment will signify by saying "Aye;" contrary, "No." It is adopted.

2. "BE IT RESOLVED that the following be added to Section 1 of Article III:

Proposals for Honorary Membership shall be handed to the Secretary-Treasurer in writing, and must be recommended to the Association by the Board of Directors before they can be elected."

All those in favor of the adoption of this Amendment will signify by saying "Aye;" contrary, "No." It is so ordered.

3. "BE IT RESOLVED that a new Section to be known as Section 4 shall be added to Article VI, and shall read as follows:

Section 4. Each member of the Board of Directors shall be notified in writing by the Secretary-Treasurer at least two weeks in advance, as to time, place, and purpose of meeting of the Board of Directors."

Lt. Col. Mock: I think that we should insert into that, that four directors shall be a quorum. I am told that we should have a definite quorum stated.

Dr. Patterson: All in favor, will say "Aye," contrary, "No." It was adopted.

4. "BE IT RESOLVED that a new Section, to be known as Section 4, be added to Article V, and shall read as follows:

Section 4. All resolutions shall be referred to the appropriate committee for recommendation before reference to the general body."

All in favor, say "Aye," contrary "No." Carried.

5. "BE IT RESOLVED that Article VIII on Amendments become known as Article IX, and that a new Article, to be known as Article VIII, be added, and shall read as follows:

Article VIII. LOCAL COUNCILS.

The Secretary-Treasurer shall have the power to take the necessary steps for the establishment of local or district branches of this Association."

All in favor will say "Aye;" contrary, "No." Carried.

Our Association is to be congratulated again, because we have with us this morning a man, who, by the work that he has done in the largest industrial city in our Commonwealth of Pennsylvania has really set a wonderful example and conferred a boon on every industrial surgeon. To those who dwell in Pennsylvania, he needs no introduction; but to those who have not had the pleasure, it is my privilege to present Major Edward Martin, Professor of Surgery at the University of Pennsylvania.

MAJ. EDWARD MARTIN.: I was still so much under the thrill and stimulus of Sir James Mackenzie's talk that I did not hear the introductory remarks of the president. I have no doubt that they were quite untrue and quite misleading, so I am spared some pain.

But that is a great message that we have heard today, carried by a man who is capable of bearing the great message; and through all the talk, playful at times, there was a fundamental vein of seriousness and a promise for the future that stirred our hearts as they have not been stirred for a long time; and it seems the act of Providence that yesterday, almost by chance, it was so arranged that this message could be brought to the one place in the world where the soil is most fertile and there is every promise of growth. Please remember that I was responsible for bringing Sir James before you.

Here are the surgeons, dressed in simple citizens' clothes, men who have charge of the army of industry—as large as that of the combat men in the field; and who, without the panoply of war, are doing their work as efficiently as are their brothers in the uniform of the United States army.

Few in number compared to the millions for whom you care, loosely organized, under no central guidance, constrained only by your individual sense of efficiency, you are destined to become the clinical teachers of the world because your status in each case will be determined solely by your power to cure swiftly and completely.

LT. COL. HARRY E. MOCK, Washington, D. C.: I feel that Sir James Mackenzie is a kindred spirit. Like a father, he has come to us, his sons, at a time when our ideals are confronted with certain anxieties; and, like a father, he has given us encouragement and wisdom to go on into the future and carry out the dreams we have had, and which we know are purposeful dreams, things which must become realities. The man who brought him, Dr. Martin, has always been behind us like a big brother, helping to extend these ideals. I move that we create two new honorary members to the American Association of Industrial Physicians and Surgeons, if they will give us the honor of accepting; and that these new honorary members be Sir James Mackenzie and Dr. Edward Martin.

DR. PATTERSON: I hear from all over the room the cry of second to Colonel Mock's motion; and those in favor of this will please arise. (All arose). It is with very great pleasure that I announce that Sir James Mackenzie and Major Edward Martin are unanimously elected to honorary membership in this Association.

[Note: At the Evening Session, Dr. William A. Evans of Chicago, Ill., was also elected an honorary member.]

DR. PATTERSON: We will have, at this time, any new business.

DR. R. L. CAMERON, Youngstown, O.: I do not know whether this is supposed to come before this body; but in Ohio we have been trying to get a Council of Industrial Physicians and Surgeons. So last year, a few of us from Youngstown got up a crowd and petitioned this body for a Charter. That matter I should like to have acted on at this meeting, and I understand that the Board of Directors know about it at the present time.

DR. PATTERSON: Immediately after the adjournment of the main Session this morning, there will be a meeting of the Board of Directors to transact some business that is to come before them at that time.

COL. MOCK: In regard to Dr. Cameron's proposal, I would say that I know it is something very close to his heart, and to that of other industrial physicians and surgeons of Ohio. I think the nucleus that he has formed in Youngstown is an excellent one. With this as a start, Ohio should organize a State Association of

Industrial Physicians and Surgeons. The parent organization would give every encouragement to their doing so. It seems to me that the ideal for us to strive for in all States, is the ideal which has been established in Pennsylvania. We should go to our departments of industry and labor in every State, and to our Governors, and persuade them to appoint, as the head of the department of labor and industry in their States, a man of the caliber of Francis D. Patterson. It would be hard to find a man like him; but if they would appoint a man as nearly like him as they could get, and have that man organize industrial medicine in the State as it is organized in Pennsylvania, we should more nearly attain to our ideal than we could in any other way that I know of—far better than by forming State Chapters that are more like individuals than a part of the State Government. Dr. Patterson did this. If others would do it, it would probably force governmental medicine on this country a generation sooner than it would come otherwise; because I believe that it will come finally. It is the way we should work in every State, to get industrial medicine established.

Dr. Patterson: Industrial surgeons in this country have not only done their part in what might be called the second line of trenches, in maintaining the health of the industrial army; but some of our men have felt the call to go into foreign lands and be of service. We are fortunate in having with us today a man who needs no introduction to this body, who has just returned from the firing line in France; and it will be our privilege to hear some of the experiences of Dr. Irving Clark of the Norton Company.

Dr. W. Irving Clark, Worcester, Mass: Fellow members of the Association: I left France about four weeks ago. To try to tell you in a few minutes what I saw in eight months over there would be a more difficult proposition than I think this meeting could stand at this time. My work was entirely with the Red Cross. I worked in the Red Cross Hospitals, in French Hospitals, in the central organization of the Red Cross in Paris, and, finally, as medical adviser to the Zone Commander of all the country being fought through now. That is the country that I have just left before I came over here.

The thing that I want to tell you now is of the work that two of the members of this Association have been doing. One is Dr. Burlingame, and the other is Dr. J. J. Moorhead. Dr. Burlingame was formally chief surgeon of Cheney Brothers, in South Manchester, Conn., and now is in the Military Affairs Department of the Red Cross in Paris. Unless you can see the work being done in his department, you cannot have any conception of the amount of work being turned out, not only every day, but every hour. The Department of Military Affairs of the Red Cross is being developed every month, not only because of the stress and strain, but because of the ability of the men at its head to shoulder the job; and he has done it. He has charge, not only of the distribution of all the supplies to the United States Army through the Red Cross, but also of the distribution of the supplies of every kind which the army requisitions cannot secure from the Quartermasters Department. Not only that; but he has charge of the Convalescent Hospital, for the American troops, and of the multiple small things which the department has to attend to where it comes in contact with other departments. Work begins at 7:30, and ends when they get through.

Take the question of the last big drive before the present. We did not know what was going to happen, and had to prepare for every possible emergency. We were working fifteen hours a day. We not only had to handle all military problems throughout the zone and increase the hospital capacities throughout Paris, but also had to work out the proposition of how to handle the tremendous overflow from the evacuation hospitals. We also worked out the question of camions to take care of wounded men scattered along the roads. During the first day of the big drive, there were men going out without even a first aid dressing, thirty kilos behind the line. We had to give these men dressings and supplies, and catch them as they went by. I am just going to give you a glimpse of the tremendous responsibility of the man in this very important position, the most important in the Red Cross today, being magnificently held by one of our members.

Now a word about Dr. Moorhead. He was, when I left, in a little chateau six miles behind the lines. He has probably evacuated it by now, because the line runs much closer. It is probably four miles away now. The chateau was under shell fire all the time. Just before I left France, I went to see the hospital; and at that time the Germans made a little push. They took four lines of trenches. The French came back and drove them out. It was a little skirmish and did not amount to much; but the wounded commenced to come in at 4 P.M., and came in fairly briskly. Moorhead had said to me, "Wait until tomorrow, and you may see some surgery." About eight o'clock, we began to operate; and from four on, the French had been operating. We operated in three shifts, each working eight hours. The wounded began to come in at four, and got pretty thick by eight. We operated from eight until 4:30 A. M. We did not sit down at all. I smoked one cigarette and drank one cup of coffee. These men were not seriously wounded, but each had to have the careful work that was necessary. We worked on twenty-six cases, each averaging two wounds. The team work of the nurses was magnificent—what you would expect in a hospital doing active work since the war began. That is the kind of work Moorhead is doing. There is just a little thing that he did, which you have read, if you have seen the issue of the *Journal of the American Medical Association* called the Chicago number. If you will look in that, you will see a letter from Major de Tenowsky. Moorhead had told me himself of that first March drive. He described it just as Major de Tenowsky does, in the vivid description in his letter to the Journal—the rush of the refugees over the roads; the looks of the people carrying their various utensils on their backs and in their carts, pulled by the old horses; the thunder of the guns, shaking the operating room while they operated. After they had watched this during the day, orders were given them to evacuate that night; because it was expected that the Germans would come over the hills. At 2 A. M., they got their wounded out and loaded them on camions to go to Paris, or loaded them on boats on the river. With that evacuation went all the nurses; and all the French surgeons went also. It was necessary to operate *en route* on the boat. When all had left, the question came up whether Major de Tenowsky and Major Moorhead should go. They were in a peculiar position. They were members of the United States Army assigned to the Red Cross for duty, and were under direct orders from the Red Cross, and not from the French Army. As they had received no orders from the Red Cross, they decided to remain until they received orders; and they decided in this way particularly because there was one soldier so badly wounded that it was impossible to transport him. They had with them a few of the French who remained behind. These men stuck to de Tenowsky and Moorhead. The American Ambulance boys, as they brought in their wounded, helped clean up everything, so that the operations could go on. Then the wounded began to pour in, the men dropping in the court from sheer fatigue, and perhaps dying there. They operated that night, and most of the next day, and succeeded in doing it in remarkably good shape. They had no nurses to help them. They took their medicine as it was given them and got good results in almost all cases. You will find the results given in that letter of Major de Tenowsky's which I hope you will read.

After twenty-four hours, the French came back; and when I went there, the hospital, much curtailed in size, was still running as before.

I am giving you these details to show you that the industrial physician, placed anywhere in the world, will deliver the goods, and not only as well, but, I believe, better than anyone else; because he is used to emergencies and occasions, and just plain ordinary fits in.

Dr. Patterson: I am sure that you will be very glad indeed to see that the President of the Association, Dr. Schereschewsky, has arrived; and you will have the pleasure of listening to his annual address—Dr. Schereschewsky.

ADDRESS BY THE PRESIDENT OF THE AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

Dr. J. W. Schereschewsky, of the United States Public Health Service.

Gentlemen, I am sure that it is one of the greatest disappointments of my life that I was unable to be here when the meeting opened this morning. I intended to leave Washington on Saturday, but it was impossible to do so. So I took the first train that I could on Sunday, but we were delayed by a hot box, so I arrived only a few minute ago. I trust that you will all pardon me for having been so late.

It has been the usual custom for the President to present an Annual Address. I have been unable to prepare a regular address, but I believe that there are a few things I ought to say to you.

Our country has now been at war for over a year, and I think that we all begin to realize that we are waking up at last. You gentlemen who have been connected with industry, are, I believe, in a position to realize better than any one else what national organization means in the effective prosecution of war, and the part that industry must necessarily play to achieve this great result. Already the problem of supplying an army of one million five hundred thousand men with all the manifold necessities of war is one which has placed a tremendous strain on our industries. Yet we are only at the beginning, for we are asked, why should we limit this army to one million and five hundred thousand men? or five million? or set any limit on the number necessary in order to achieve the great purpose for which we are all banded together? It therefore follows that if we are going to make war without limit, we must also produce without limit. Faced with that proposition, we have the problem not only of increasing the efficiency of the individual member in industry, but also of greatly increasing the efficiency of the work in face of the fact that the men ordinarily available for industrial production are serving in the trenches.

We are, then, confronted with the problem of securing maximum human efficiency; and I believe that it is within the province of the industrial surgeons as a group, and of socially minded physicians as a whole, to assist very greatly in the solution of that problem.

On the occasion of my last annual address to you, I endeavored to outline the necessity of some concerted action on the part of this body, in order to protect the health of the industrial group of the population. With the passage of time, I believe that necessity has become more manifest than it ever was before. We are certainly in need, at present, of some great unifying agency, which will concentrate in one centralized direction all agencies for the protection of the health of the workers. The need for some such agency, I think we have all been aware of; and yet, up to now, our efforts in this direction have been diffuse rather than concentrated. I, myself, have been eagerly awaiting the hour when some concerted movement for the protection of the industrial health would be initiated. However, the signs of the times all seem to point to the fact that shortly some agency will be brought into being that will achieve this great end.

For instance, the Medical Section of the National Council of Defense has taken cognizance of this situation. We, in the Public Health Service, have been aware of this need ever since war was declared, and have been trying to co-operate in achieving this result; but in a country such as ours, we generally cannot initiate any such great movement unless the great body of public opinion supports it actively. I believe, however, that signs are not wanting to show that public opinion is crystallizing towards a centralized means for the protection of the public health.

Of course, it is not for me to specify in what way such centralized means should be organized. Personally, as a representative of the Federal Public Health Service, the agency which is the civil health arm of the Federal Government, I feel very strongly that whenever such an agency is developed it should have the Federal Public Health Service as its nucleus; and that civil public health measures initiated for the protection of the civil population should be under the supervision of the Public Health Service. This is because such measures do not consist in any specialized line of health activity, but they involve the whole broad field of the public health. For this reason, it is only fitting that the government agency which has to do with this broad field should be the controlling agency or at least the supervising agency in the operation of such health activities.

It is evident, however, that in establishing such an agency, its activities must be the result of federal co-operation with State and local health authorities; also with physicians who are directly interested in that line of work. I think, therefore, that one can forecast that any such correlating agency, should have, as a basis for its effectiveness, the thorough realization on the part of all, of the ends that it is desired to achieve. It would accomplish its results in direct proportion to the degree in which all its composing units feel the value and the necessity of the objects to be attained.

Besides the well recognized fact that adequate protection of the health of workers is one of the most valuable things that we have at our command for directly increasing industrial efficiency, we are now facing a most serious problem, indeed, which further emphasizes the need for such measures; and that is, of course, the forthcoming shortage of men in the medical profession. As you are well aware, large numbers will be needed for protection and medical care and attention to the troops; hence the necessity for making more efficient the men who must stay behind. It seems to me almost as though we were at the dawn of a socialized system of medicine. It seems to me hardly possible that the profession of medicine can remain individualistic to the same extent as it has up to the present time. It certainly seems that it must be borne in more forcibly than ever on every member of the medical profession that medicine is no longer merely a means to a livelihood, but the medical and sanitary professions are necessary parts of the body politic, which, in times of emergency like this, have for their special function the increasing of national efficiency.

That, gentlemen, I think, is the attitude that all of you should take toward your jobs: That you are peculiarly placed by virtue of your professions in a position by which you may very materially increase national efficiency; that in your hands, largely, lies the making of the work of the millions of men and women whose best efforts we need, to make our participation in this war reach a maximum efficiency. I think that all of you have now, with this viewpoint a far larger position to fill than you ever had before. It only remains for all who are interested in this work to realize, then, what great potentialities there are within our grasp and the way in which this body, by assisting public opinion to crystallize itself and bring about a concerted effort for the protection of the industrial group of the population, can increase very greatly the sum total of national efficiency.

This, then, gentlemen, I take it, is the main task which our group of industrial physicians has before it today, as one of the most important bodies for putting into practice in the industries measures for the protection of the industrial group of the population, namely: To get together and formulate the best way in which it can assist a federal central agency, whose object it is to increase the measures for the protection of the public health. I wish I had, perhaps, something more definite to say to you as to the means by which this could be immediately carried out. I think, however, and I hope, that the answer to this question will not be long delayed; and that, in no long space of time, we shall see this body of industrial physicians and surgeons, now in the third year of its existence, acting as a unit and effectively establishing this great end.

Dr. Schereschewsky took the chair.

Dr. Scherechewsky: I will call on Dr. Charles A. Lauffer, Chairman of the Nominating Committee, for a Report.

REPORT OF THE NOMINATING COMMITTEE

The Nominating Committee begs leave to submit the following report:

President: Lt. Col. Harry E. Mock.

First Vice-President: Dr. Thomas R. Crowder.

Second Vice-President: Dr. Otto P. Geier.

Secretary-Treasurer: Dr. Francis D. Patterson.

Directors: Dr. J. W. Schereschewsky, Dr. Don B. Lowe, Dr. E. H. Hanna, Dr. Judson K. Fisher, Dr. A. W. Colcord, Dr. H. P. Hourigan.

Respectfully submitted,
(Signed) Charles A. Lauffer, Chairman.
Wilber E. Post,
C. D. Selby.

Captain A. J. Lanza, Pittsburgh, Pa., chairman of the Resolutions Committee: The report relative to the death of Dr. Luther will be presented directly to the Secretary for incorporation in the records of the Society.

Dr. Schereschewsky: Are you willing to accept the Resolution on Dr. Luther's death to be incorporated in the minutes? If so, signify it in the usual way. (Carried.)

The meeting of the Board of Directors will take place immediately after the close of this Session.

Now it becomes my present duty to induct into the Chair the President for the forthcoming year, Lt. Col. Harry E. Mock. I think that we all feel that Colonel Mock, more than anyone else, is responsible for this body. He, I think, more than anyone else, conceived it. He, more than anyone else, I think, has had a clear vision of the enormous power for good that such a body might develop in the future; and he perceived, at the time of the foundation of this society, the crying need for the banding together of the men engaged in industrial medicine and surgery. I think that we all feel that, under the presidency of Colonel Mock, this Association will make great strides during the forthcoming year. Therefore, it is with the greatest pleasure that I now introduce to you your president for the coming year, Lt. Col. Harry E. Mock.

Lt. Col. Harry E. Mock, Washington, D. C.: I thank you for this honor.

Three years ago, in Detroit, when we started, we had a vision of an association something like this. It has progressed far beyond that vision. The war has been partly responsible. We sometimes wonder why God allows such a terrible war to go on; but we all realize that the world is being purged of a great many things and that true social democracy is being born. I believe that our organization is one of the leaders in this true social democracy.

Our retiring president, as Assistant Surgeon General of the United States Public Health Service has become a leader in the medical world. His efforts combined with that of others is gradually evolving a system of socialized medicine in this country.

I know that the secretary of this Association is the one who has the most to do; and the greatest organizer that this Association has is Doctor Patterson, who has just put over in Pennsylvania the best medical machine in this country. If we do continue to grow, it will not be due to the efforts of the president, but to those of the secretary, Dr. Patterson, who is sitting over there. I am going to ask Dr. Patterson to tell us in two words whether we are going to grow or not.

Dr. Francis D. Patterson, Harrisburg, Pa.: Well, in the Commonwealth of Pennsylvania, we have a great many industrial surgeons, the majority of whom are members of the organization. It is going to be my effort not only to see that all who belong in Pennsylvania and do not belong to this Association do join, but to scour the country and get the rest of them in.

Lt. Col. Mock: The Directors will meet in this room. The regular afternoon program will start promptly at 2 P. M.

The meeting is adjourned.

(Adjourned at 1:05 P. M.)

AFTERNOON SESSION

RELATION OF THE MEDICAL PROFESSION TO INDUSTRIAL EFFICIENCY IN WAR TIME

C. D. Selby, M. D., F. A. C. S.
Toledo, Ohio

To win the war is the supreme purpose of the people of the United States, and the war will be won, but not until the United States has sent to France men in sufficient numbers and supplies in sufficient quantities to turn the balance of power to the Allies.

Granting that it takes six and one-half persons, as estimated, to produce the supplies necessary to maintain each soldier, an army of 5,000,000 men, which is not an unlikely number, will require the backing of 32,500,000 persons in the war industries. These are the industrial man power of the United States, and these are the people who are providing our fighting forces with fighting facilities.

It follows that it is just as necessary that this industrial man power be developed to its greatest degree of efficiency and maintained at that degree as it is that the fighting forces be mobilized to the number indicated.

Parenthetically it may be said that 170 establishments engaged in the manufacture of war materials have been visited during the past six months for the purpose of studying their medical departments. Opinions expressed in this paper are based upon observations made during the course of these visits.

Manufacturers have long since realized the necessity for quantity production in order that the war demands may be met, and they have caused their establishments to undergo enormous expansion for that purpose. The chief obstacle they have had to overcome in doing so is seemingly a shortage of labor, which may be accounted for in four ways:

(1) Our foreign supply has been cut off for four years.

(2) Many men for the military forces have been taken from among the industrial workers.

(3) The rotation of labor is high.

(4) The labor requirements of the expanded industries have greatly increased.

These conditions have necessitated the development of new sources of labor supply. Women have been induced to go into the industries to do the work that was formerly expected of men. Clerks, office men and others from the less arduous occupations have been attracted to the mills and factories. As this is being written a newspaper item announces that the national child labor law has been declared unconstitutional, which may mean that boys and girls will undertake industrial pursuits.

High wages are inviting these people into certain of the war industries. Higher wages draw them to others. Inexperienced men and women, unaccustomed to industrial life, are floating from shop to factory and from factory to mill hunting jobs to which they can adapt themselves. Labor turnovers everywhere are abnormally high, and the possibilities for wastage, retarded production, and expense are great.

The basic problem is to induce the working people to stay with their jobs. The solution requires that employers not only must make working conditions attractive and pleasant, but that they also must safeguard employees from circumstances that compel them to stop work, of which illness and injury are examples.

The secondary problems are to develop them into efficient workers and to maintain them as such. This necessitates the proper selection of employees for the work they are expected to do, special training during the early days of employment and, subsequently, intelligent supervision of their relations to each other and to their work.

Owing to the development of industrial medicine, whereby its usefulness has been materially extended beyond the treatment of emergency cases, employers have come to depend more and more upon the aid and advice of industrial physicians in the solution of their difficulties in these labor relations.

This increased appreciation of the value of industrial medicine, and with it the organization of medical departments in establishments that previously had none, has been accompanied by an enlargement of the existing medical departments of the rapidly expanding war industries, and a greatly increased demand for industrial physicians has resulted. At the same time the inflow of industrial as well as other physicians to the Medical Officers Reserve Corps of the Army has caused an actual shrinkage to take place in the supply of physicians available for industrial service.

If war supplies were not necessary to the maintenance of the army and the navy, and if a competent industrial man power were not necessary to the manufacture of war supplies, and if the special knowledge and skill possessed by physicians were not necessary to the maintenance of a competent industrial man power, then the shortage in the supply of industrial physicians would be unimportant. But it is important and it claims earnest deliberation. It is the most serious question to be considered in a discussion of the *Relation of the Medical Profession to Industrial Efficiency in War Time.*

For the sake of emphasizing the importance of this point, reference is made to the relative values in our national man power as applied to the purpose of winning the war. First, and without question, the most valuable is the man power of the fighting forces. Second, and next in value, is the man power which provides the fighting forces with transportation and supplies. Third is that of the civilian aid which contributes money, relief, recreation and moral backing to the fighters.

In addition to the responsibility of maintaining the health of the industrial man power, physicians are also answerable for the education of other physicians in order that medical service may be continuous and increasingly effective.

Industrial medical service cannot be made to attract physicians, or even to retain those now engaged in that branch of medical practice, until industrial service is recognized as a patriotic duty of the medical profession and necessary to the winning of the war.

Industrial physicians in the beginning were compelled to demonstrate conclusively to the employers of labor that medical knowledge and aid are capable of assisting them to stabilize their labor and to facilitate their production. Industrial physicians were forced to convince the working people that medical science and skill can help them to do a better day's work and to earn a better weekly wage. Industrial physicians have been obliged to impress the whole medical profession with the fact that practice in the industries is an honorable, highly specialized branch of the practice of medicine, rich in opportunities for humane service, and physicians generally are only now coming to realize that this is true.

Industrial physicians must also assume the leadership in causing the people of the United States to recognize medical service in the industries as a patriotic duty of the medical profession, and second only to the duty which the profession owes to the military forces. They must likewise assume leadership in the special educational work which is indispensable to the preparation of the physicians for industrial responsibilities.

In view of the foregoing, it must be evident that this association of industrial physicians and surgeons has three well defined obligations in connection with the war. These are:

(1) To bring the whole medical profession to a more intimate understanding of industrial medicine and the possibilities it offers for the scientific application of the special knowledge and skill possessed by physicians.

(2) To bring the people of the United States to a more sympathetic appreciation of the patriotism of the physicians who remain in or volunteer for industrial service.

(3) To induce the proper authorities to provide means for the special training of physicians who may volunteer for industrial service and to assign them to industrial establishments or districts, on request or otherwise.

In order to bring the whole profession to a better understanding of industrial medicine, which is the first obligation of this association, it is suggested that each member pledge himself to prepare each year one manuscript for publication subject to the following conditions: (1) The subject matter must (a) establish new facts, principles, or modes of practice, (b) embody the results of original researches, or (c) present so complete a review of the facts concerning a subject as to warrant important conclusions. (2) The manuscript must be submitted to the publication committee for consideration and if meritorious will be offered by that committee to the medical or other publication for which it may appear, in the judgment of the committee, to be adapted. (3) Failure to comply with the foregoing, except on explanation acceptable to the publication committee, will cause suspension until a manuscript in compliance with the foregoing shall have been submitted to the publication committee.

A volunteer Medical Service Corps is now being organized in connection with the army. Its purpose appears to be the official recognition of physicians who, because of incapacity, industrial, civil, or institutional responsibilites, are unable to accept commissions in the M. O. R. C. of the army. They will be privileged to wear a button on the lapel of the coat as a mark indicating their relation to the army.

The intent which has prompted the organization of the Medical Service Corps is splendid, but a button on the lapel of his coat will not save the industrial physician from crucifixion upon a slacker's cross by popular opinion. Buttons are too common nowadays. They may mean anything from a lodge membership to the purchase of a liberty bond. A uniform is the only emblem that the public will recognize and will permit the industrial physician to pursue his work whole-heartedly and efficiently. To obtain this recognition for him is the second obligation of this association in connection with the war. Its accomplishment is so merged with the fulfillment of the third obligation that that will be discussed immediately.

It is suggested that action be taken to obtain the organization of an industrial medical reserve corps. As industrial medicine is fundamentally preventive medicine, the U. S. Public Health Service appears to be the logical division of our government to direct such a corps, and incidentally this arrangement would affect better cooperation between the local and state health authorities and the industrial physicians.

Applicants for commissions in the corps would, of course, be examined for fitness. If necessary they could be detailed for special instruction. They could be given a short course of lectures which would enable them to adapt their knowledge of the practice of medicine to industrial needs, and subsequently they could be detailed for actual experience to certain of the industries having advanced medical departments, where they could serve as internes.

Upon the presentation of satisfactory credentials and, if required, upon the satisfactory completion of a course of instruction and training, the applicant would be eligible to accept a commission as an officer of rank commensurate with his abilities, in the Industrial Medical Reserve Corps, and as such he would be held subject to assignment for industrial service.

Assignments would originate from requests of employers for physicians and would continue so long as agreeable to employer and physician. The salaries would be paid by the employers, the minimum amounts to be as of the rank of the physician in the corps. Refusal to accept a commission would be tantamount to a resignation from the corps. Discharge or resignation from an industry would be subject to revision by the Bureau.

Employers of small numbers, with plants strategically located, could effect combination arrangements, whereby one physician could be assigned to serve them all. Physicians already engaged by the industries, upon accepting commissions in the corps, would certainly be assigned to their respective industries.

Upon the termination of the war, should it be deemed wise to discontinue the corps, the U. S. P. H. S. could retain the employment feature, with advantage to both industries and industrial physicians.

The foregoing idea is presented without authorization from the Bureau of the U. S. P. H. S.

There are other matters to be considered in the relation of the medical profession to industrial efficiency in war time, such as women in the industries, whether or not physical examinations should be stopped during the labor need, the war time activities of health officers in the environs of large industrial establishments, physical reconstruction of the incapacitated worker, etc. These will not be discussed. The fundamental problem in the industries at this time, so far as concerns the medical profession, is the doctor himself. To provide large establishments and small, each and all, with competent industrial medical men who are inspired by the compelling desire to maintain the health of the producers of war supplies, in order that the war may be won, is paramount to all other problems, and the solution of this solves all.

For the sake of emphasizing the foregoing, permit these repetitions:

The American Association of Industrial Physicians and Surgeons is the only national organization concerned in the practice of medicine in the industries. It is the only national organization that is fully alive to the value of industrial medicine in the conservaton of the industrial man power.

The position which this Association occupies obligates it to take the initiative in a movement to gain for industrial medical practice a true recognition of its value, in order that the medical profession may be able to respond in full measure to its opportunities for service in the industries to the end that the maximum production of war supplies may be facilitated.

This obligation necessitates three accomplishments:

(1) Measures must be taken to arouse the medical profession to a realization of its responsibilities in the conservation of the industrial man power.

(2) The people of the United States must be caused to recognize the patriotism which prompts physicians to serve in the industries.

(3) Action must be taken to inaugurate the organization of an instrumentality for supplying trained physicians to industrial establishments now in need of additional or other medical service.

I have just one word to say in closing. To me, it is a wonderful thing to be a physician; and now, as never before, have I realized the opportunities which come to a physician for human service. We shall not win the war as physicians; but the lack of well co-ordinated medical service can cause the war to be lost, because the winning of it depends absolutely on the proper disposition of our man power. We are the only people capable of maintaining the health of the man power of the nation. Our opportunities are wonderful. I am proud to be a physician! I am proud to be an industrial physician! I am proud to be associated with this organization—it is an inspiration! I am proud to have had the opportunity of addressing you in this capacity. What I have learned has been from you.

DISCUSSION ON DR. SELBY'S PAPER

Dr. D. B. Lowe, of the B. F. Goodrich Co., Akron, Ohio: Dr. Selby's paper was discussed rather thoroughly, in some of its aspects, this morning.

I feel that government supervision of medical work in industry is coming. Under what authority it may be, does not make very much difference; but that supervision is necessary, I am quite convinced.

It seems to me that very many of us look at the industrial problem as related to medicine through association with the individual factories with which we are identified. If we have a small factory in our charge, we look at it from the viewpoint of the problems that we meet there. If it be a large one, we are inclined to look at it in another and a different way. In either case we are lost if we confine ourselves to our individual factory alone. We must bring our interest into the Community and the State Health Department, and finally into the Government Health Department, if we are to be successful.

Our shop supervision lasts only eight hours a day. The other sixteen hours, the employees follow their own inclinations. The industrial authority does not extend beyond the shop. Unless there is co-operation between the Health Departments of the municipality, State, and nation, we cannot do the work that every industrial physician should be able to do, namely, a public health effort in industry itself. Therefore, if we are one of the Government agencies, the problem that confronts the man who has charge of small numbers of men and the man who has charge of large numbers can be more easily standardized and worked out to greater effectiveness.

As to the training of industrial physicians, I think the industries that have already established Health Departments can offer opportunity for one entering the work to obtain practical experience. There is industrial material in many which can be made of value to men going into this work. It is necessary to obtain the viewpoint of employers, superintendents, foremen and sub-foremen, right down through the organization, if one is to succeed. Industrial medicine must meet industry three-quarters of the way. Industry's production is going on at increased pressure, every department manager being held responsible for the product of his department, and recognition of this fact must be borne in mind.

One of the most valuable points made was the suggestion that members of our society be called on to prepare papers establishing new facts of preventive medicine in relation to industrial work. I think that this would be a splendid thing, if it could be done. Some years ago, before entering the army of industry, an industrial physician asked me what I had done to learn about it. He asked whether I had gone to the library and looked up the subject; and I told him that I had, but had found very little information. His point was that there was little literature on the subject. This problem confronts many young men; many older men are looking for information in connection with the subject, judging from the number of questionaires that come in regarding the work. They ask how the plant dispensaries, plant hospitals, and all the other things that pertain to the industrial health department are conducted. These questions cannot be answered by any one establishment or less than several. If Dr. Selby's plan is carried out, and each member called on to write a paper about new facts, we should have a fund of literature available for those coming into the active practice of industrial medicine and available for our own advancement. I should like that put in the form of a motion and have it made a fact.

Dr. Charles S. Kennedy, Logan, Iowa: I wish, first, to congratulate Dr. Selby on the paper and the truth that he has brought before us. There is one phase of this question that is present in a peculiar locality where I practice medicine, that has not been brought out. It has to do with the agricultural part of the work. As local railway surgeons, we are brought into industry in a different manner from those in the manufacturing centers. The questions and problems that we have to meet are altogether different; and, in a few brief words, I am going to tell you how they are being met by the men of the rural communities.

To reach the heart of a nation, you must go to the mother. The mother love is the love that gets right next to each man and child. The Red Cross is the great mother arm of our nation today, and is reaching the industrial children of our nation. Through the Red Cross, I believe that we have an opportunity to do something that will bring great good. At our Medical Society meeting, I brought the proposition before the men, that we organize in each town a branch of the Red Cross. We did so. First aid instruction is given by the physicians; and in a short time now, I am going before each branch in our town to organize first aid classes under the name of the Red Cross. It was my privilege to examine a class in a small country town, and eight girls were examined; and ninety-two percent was the lowest grade obtained by any of them in a very rigid examination. What does that mean, if carried through to the high school of every county? What does it mean, if we can reach every home and get the mother interested in the little questions of asepsis and antisepsis? What would it mean in the rural district? This rural question, from the standpoint of the farmer and the producer, is a question that we must understand; and if it is my privilege to meet with you another year and give a report I trust that my report, from a little county in a rural district will show that we are working hand in hand with the large manufacturing centers, and are reaching the mothers and teaching them preventive medicine.

I want to say a word of appreciation of my opportunity to unite with this class of men, who are out in the front line trenches of medicine; who must know operative surgery, and not only one department; who, by reason of the places they are working in, cannot recognize any claim in the sick or anyone else but humanity; who are broad enough to recognize every department of medicine as being essential to a true physician, in the country or any other place; and to know that their surgery is done right. By this we will raise our standard and bring recognition, not only from the Government, but from civilian activity, that will give us credit.

Dr. W. Irving Clark, Worcester, Mass.: Just a word to show what the medical schools think about the industrial movement at the present time: The Harvard Medical School is now endeavoring to enlarge its Chair of Preventive Medicine to include instruction in industrial medicine and surgery. The plan has not absolutely gone through yet, on account of the financial backing needed. The financial backing is being provided in Massachusetts, and all through New England by the manufacturers; and at present, it appears to be pretty sure that the Chair is going to be established, because forty-five of the leading factories in New England have consented to contribute one thousand dollars a year for at least five years, that this may go through. This shows, in the first place, that great medical schools throughout the country realize the great importance of the industrial physicians and surgeons; and, in the second place, that manufacturers who have already established medical departments consider that this is of sufficient importance to make a comparatively large contribution towards the establishment of such a Chair by the College, although they themselves will probably reap little benefit from it.

Lt. Col. Mock: Is there any further discussion on this paper? If not, Dr. Selby, will you please close the discussion?

Dr. C. D. Selby, Toledo, Ohio: There is really only just one thing that I wish to say; and that is, that I am glad to learn from Dr. Clark that the Harvard Medical School is thinking of broadening the activity of its Department of Preventive Medicine. As I have gone through industrial establishments, I have found that the employers are seriously in need of well-trained medical men; and they appreciate the fact that these well-trained medical men, well trained for industrial purposes, can be of considerable assistance to them. In industrial establishments, the only thing that counts is production. Anything that retards production is tolerated only so long as it cannot be avoided. Injury is a source of expense. They who cannot do anything of service beyond the care of injury represent a source of unavoidable expense, and they will not be capable of rendering a better service, if they do not go in from the standpoint of facilitating production, or from the standpoint of preventive medicine as a whole. The thing needed is to give them the standpoint of preventive medicine, as well as the standpoint of repair of injury.

LESSONS FROM THE RECONSTRUCTION OF THE WAR DISABLED, APPLICABLE TO THE INDUSTRIAL ARMY

By Lt. Col. Harry E. Mock, M. C. Division of Reconstruction,
Office of the Surgeon General, Washington, D. C.

As the most of you know, I have been in Washington since last October, working in the Division of Physical Reconstruction. A great many ask what physical reconstruction is; and before I try to point out the lessons that industrial medicine can learn in physical reconstruction, I will endeavor to tell you a little about our plans for the physical reconstruction of the disabled soldier.

The army regulations provide that when a man becomes unfit for full military duty, as the result of disability, he is to be discharged from the army. In the old days, they discharged the man without completing his cure — in other words, he was "scrapped." From this, our soldiers' homes resulted. The Division of Physical Reconstruction of Disabled Soldiers, in the Surgeon General's office was created for the purpose of reclaiming them, and the first step was to do away with that army regulation which permitted of their being discharged before they were reclaimed. A short time ago, after months of study and endeavor, the Surgeon General obtained from the Secretary of War his O. K. to the policy that in the future all disabled soldiers should be held in military service until the medical department had cured them as far as was humanly possible. That was a great advance in conserving the man power of our army. In order to cure these men as far as is humanly possible, the Division of Physical Reconstruction is planning certain therapeutic adjuncts, in addition to the medical and surgical treatment as we have practiced it in the past. A few doctors have always used them, and the very few who have done so are the industrial surgeons.

We plan to use mechano-therapy, psycho-therapy, electro-therapy, gymnastic drill, and anything that will cause the men to exercise and get strength back in their muscles. In addition, we are developing curative shops in connection with our hospitals, where the disabled man, as soon as his condition permits, is given occupational therapy. In these shops, a certain amount of work is given him, according to the physician's directions. The physician also directs how long he can work there. This work plus academic studies is given a practical trend towards placing him in civilian life a better man than before he went into the army.

At first, we took up motor mechanics, carpentry work, Turkish rug making, mat making, mechanical drawing, and commercial instruction. One of the best things was getting some reconstruction aids, as we called them, that is, some women who had a vision, and who began to help the men while they were still in bed or around the ward. They taught them how to do a number of little practical things for themselves, which they had to learn over again because of their handicaps.

When we have completely cured these men as far as is humanly possible, they are to be discharged from the army, but are not to go back into civilian life to find a place there, some finding it, and others going backward. The government is creating an agency to take care of the rehabilitation end of the work. The care of the men is divided into two stages: Reconstruction and Rehabilitation; but these dovetail and overlap. One, however, is military work; and the other, civilian. By discharging him from the army and putting him under civilian influence, he becomes independent more rapidly, so the Government is forming this civilian agency to handle the rehabilitation end of the work. A Bill has been introduced into Congress and has unanimously passed the Senate, providing that the Federal Board of Vocational Education, which has been in existence for three years and has representatives of labor, business and all types of education on it, shall take charge of the rehabilitation end of the work. The Board is to provide retraining for those who need it, with the idea that every man so disabled that he cannot attend to his old job shall be trained for a better job than he had before the war. In addition, it will place him back in industry, and will co-operate with all agencies that look to placing men not only in industry, but in professional life and every other activity.

Moreover, they must co-operate with the War Risk Bureau, the Bureau that has charge of the insurance of these men. We are now talking of allotments for them. A great many will come back unable to take hold of their old business. For instance, a man in Kansas, a drafted man, who was the "druggist on the corner," had just bought his store and paid for it. He gave it up and went into the army; and it should be the duty of the Government to help that man to get back his drug store. It must also look to the supervision of the man after he has been retrained and put back in industry; and it is planned to cooperate with the Civilian Relief Division of the American Red Cross, which is looking after the man's family while he is "over there." It will naturally be the endeavor of the Red Cross when the man comes back to be a big brother to him in the days when he is finding himself. Not only these, but every other agency in the country that can help in any way in this work, must be depended on. That, in a nut shell, is the plan of the government for the physical reconstruction and rehabilitation of these disabled soldiers.

As industrial surgeons, we have been practicing reconstruction for a number of years. Our job has extended from prevention, to getting the man back on the job as soon as possible, when injured or physically disabled on account of disease, but everyone here realizes that the wastage among the industrial disabled of this country has been enormous and that the means of reclaiming the disabled are still extremely inadequate.

Every nation in this war has awakened to the fact that some men with the worst kind of handicaps have become successful, useful citizens. Therefore, why can't all men, and especially why can't the soldiers disabled because of war duty?

And so with one accord these nations have provided the means of reclaiming their disabled soldiers and of giving them proper training for the future so that they can make good by their own efforts.

The Medical Department of the Army at the very beginning of this war began to make plans for reclaiming all disabled soldiers. After other wars our country had provided soldiers' homes for many of the disabled, or had provided pensions to help the crippled men eke out a living at some mediocre job.

But young America today would not be satisfied with such an arrangement. They have made the great sacrifice for their country in her efforts to give Liberty to the World. Their country therefore must provide a future of liberty and independence for them.

Thus backed by every branch of the Government and co-operating with other agencies who have a part in the work, the Medical Department of the Army has evolved the plans for the Physical Reconstruction and Rehabilitation of Disabled Soldiers.

I am here, however, to speak to you about another soldier, the industrial soldier, the soldier of the second line of defense, the man who belongs to that great industrial army, which is just as essential to the winning of this war as is the military army, and the man who becomes disabled and wounded without the glorification that comes from such wounds when secured on the battlefield.

During the last decade, a new specialty has developed in the

Medical Profession which deals with the Human Maintenance in Industry. This must not be confused with the work of the old-time company doctor which consisted chiefly in rendering emergency treatment to the injured employees. This new specialty of Industrial Medicine and Surgery includes everything necessary for the complete supervision of the health of the employees.

Human maintenance in industry consists in applying the general principles of medicine and surgery to a large group of people as a unit. While individuals receive special medical or surgical care whenever needed, yet the chief purpose of this specialty is *prevention*, *Prevention of Disease* or *Accidents* among the entire group of *Employees; Prevention* of undue loss of time when injury or disease assails an employee; *Prevention* of deformities and permanent disabilities; *Prevention* of inefficiency on the job when traceable to some physical condition. In fact, the *Prevention* of everything which would tend to undermine the physical or mental welfare of the working force.

In order to accomplish this, many of our largest industries have developed a staff of capable physicians and surgeons who spend part, or all, of their time at the plant. Here by being on the job—in the front line trench of *Industry*—they are not only in the strategic position to study and apply every phase of *Prevention*, but also to render *Immediate and Proper* medical and surgical care to every sick or injured employee, which after all is only another form of prevention.

This comprehensive system of Industrial Medicine and Surgery has been adopted by many of the larger employers. Today approximately one-tenth of the workers of our nation are receiving the benefits, to a more or less degree, of this work. There still remain, however, many more large concerns, the small employer, the householder with his domestic help, the farmer with his hired men, and many others who have never considered it a duty to safeguard the health and welfare of those working for them.

When we consider that 40,000,000 persons in the United States are engaged in gainful occupations, we can then comprehend what the adoption of a nation-wide program of disease and accident prevention would mean to the economic existence of our country.

But in spite of all our Prevention methods we have, and will continue to have, the disabled employee in our midst. The man who is no longer able to continue at heavy work because of a damaged heart or circulatory apparatus; the man who develops tuberculosis, and even though cured, is afraid to or advised against returning to his former work, or is rejected from one job after another because of his damaged lung; the epileptic who, to safeguard the concern against possible compensation, is fired as soon as his condition is known; the men with hernias, with flat feet, and many other anatomical conditions that make them inefficient; as well as the armless and legless and others seriously handicapped, the result of injuries; all make up our army of disabled men. Every year adds to the total of incompetents who on account of disease or accidents are prematurely thrown into the scrap heap because their handicap prevented them from continuing at their old occupations.

A few industries have salvaged these disabled and made them efficient and independent. Some industries have given their disabled employees easy jobs where they could make a living. But the very softness of the job robbed them of all incentive, and the bitterness engendered from dying ambition added to their incompetency, so that many of these drifted on into the scrap-heap. Other industries settled with their disabled workman when they were legally responsible and then dismissed him. Their disabled for whom they were morally responsible were scrapped without a settlement.

These men, trained for certain occupations, who meet with permanent handicaps are the waste products of our industrial life, and have been since the birth of our nation. Too often when employed they are ineffective because they are thrown into the job without considering their physical fitness for it. Again, they are given the positions of watchman, flagman, messenger service, porters and similar work when, with proper training, their full mental energy and remaining physical capacities could make them highly efficient in much more gainful occupations.

The most unfortunate group of disabled men are those who cease to be employed by the concern responsible for their disability. Other employers are not interested in them—do not feel responsible for them. They drift from one job to another, constantly dropping into a lower scale, until finally they relinquish all effort to work. These make up the loafers, the beggar on the corner, the shoe-string merchant on the street, the poor physically handicapped, and mentally debased flotsam and jetsam of our civilization.

The great lesson therefore which Industry can learn from the plans of the Army to reclaim the disabled soldier is the complete rehabilitation of the disabled from the Industrial Army.

We have done excellent work in Prevention. We have done our utmost to physically reconstruct the disabled employee. But haven't we been neglectful of the end result from the economic and social standpoint?

These handicapped soldiers from Industry must not only be physically cured, but they must be retrained for new work when their disability prevents return to the old job; they must be given suitable employment in a position that affords them equal income and the opportunity for initiative and advancement; adequate compensation must be paid them for disabilities directly the result of occupation, without derogatory reaction upon their future opportunities; and proper supervision must be maintained over them to see that their rehabilitation is completed and so remains.

Today, as a result of our plans for the reclaiming of the war disabled, the nation is awakening to its responsibility toward the civilian disabled. Man power will win this war, man power at the front over there, and man power in the great Industrial Army—the second line of defense—over here. As a nation we are united in one great purpose—our determination for an unconditional victory. Our every motive must be toward this end. Therefore every effort expended for the conservation of human life and the reclamation of all human energy in both the military and industrial armies, will be of the greatest aid in achieving this victory.

DISCUSSION OF COLONEL MOCK'S PAPER

Lt. Col. Mock: In a way, the cart was before the horse in this paper that I just gave; because I have asked a man who has done one of the greatest pieces of work that has been done in this war to discuss the paper. He should have written the paper, and I should have discussed it. I refer to Mr. T. B. Kidner, Vocational Secretary Invalided Soldiers' Commission of Canada, one of the first men in Canada to have the vision of reclaiming the disabled soldiers and returning them to industry, and who came from Canada to discuss this paper and tell you a little of the work that they are doing over there.

Mr. T. B. Kidner, Vocational Secretary, Invalided Soldiers' Commission of Canada: It is a very great honor indeed for a layman to be asked to a meeting of the medical profession, and I feel it very much. I am very grateful for this opportunity of telling you of some of the things that we have tried to do for our disabled soldiers in Canada.

I think that Colonel Mock, in his paper, indicated one reason why a layman might have something to say on this, when he said that from the beginning of the work, whether it be purely physical or not, the industrial future of these men that we are trying to reclaim, trying to conserve their man power, must be kept in mind, all the time. Any success that we have had in Canada in what we tried to do has come from the fact that from the very first, we have had qualified men entrusted with the vocational rehabilitation of the soldiers, who have had splendid co-operation on the part of the surgical and medical officers. We have thus been able to do the best for the men who have lost their powers and have been disabled in fighting our battles for us at the front. It is now three years since our stream of disabled men began to trickle home. Since then, we have had rather more than a trickle. Up to date, the Invalided Soldiers' Commission has handled more than thirty thousand disabled men who have been returned from France.

The work of the Vocational Branch with which I am associated has fallen into two divisions. From the first, we have recognized, what, I am sure, you will know a great deal more about than I do—the evil effects of idleness on disabled men. Our first work was to provide every man in the hospital with something to do; and, frankly, when my Commission asked me what we were going to do for the men who had lost their legs and arms, I said that I did not know; because at that time we had not twenty men back who had suffered major amputations. We had nine hundred to one thousand sitting about in hospitals, doing nothing, and becoming demoralized—hospitalized—and more disinclined to go to work again, every day. Frankly, we had very little to go on. We started out to give them something to do. Some of the surgeons and doctors saw that it would have a therapeutic value and a disciplinary value. We had rather too much of the "wounded hero" business which I assure you your men will suffer from, as ours did. We were inclined to spoil the men, and we had disciplinary troubles. To give them something to do and help in the general discipline and the self discipline by preventing their hospitalization and deterioration from idleness,—these were the first principles that we started on.

We made a definite survey of every man who came back, and have been carrying that out since. Our procedure was as follows:

When a man landed from an ambulance transport (hospital ship) or one of our troop ships, he was sent to the vicinity from which he enlisted or in which his family resided. Leave was given him to visit his family; and then, if he required it, he returned to the hospital for treatment. As soon as he entered, he was seen by a vocational officer, a civilian, who made a survey of him from the point of view of his educational and industrial history. If the doctor said that the case would clear up and the man would be able to go back to his former job, then the vocational officer did his best for the man in providing such work as would help him to get better; subject always, of course, to the medical officer's direction.

We have in mind, always, in providing work for the men in the curative work shops, the man's future vocation. We have done with him, when his medical treatment has reached a conclusion and he is able to go back to work. He is then handed over to the Employment Commission of his province, which looks after him and finds him a job. If, however, the medical history and the opinion of the medical officer indicate that the man will not be able to return to his former occupation, a more definite and careful survey is made of the case. An endeavor is made to discover, with the help of the man, some occupation to which he may be directed for training.

In passing, may I say that one question which is being discussed at present in the United States by the authorities, and which has been much debated in other countries, is whether or not the training should be made compulsory. In Canada, it has been found unnecessary to make it compulsory. I would not want a man to be made to take a course of training against his will. I think that would not succeed. In Canada, we have found no necessity for making the training compulsory.

But, when the man's future vocation is decided on, we do not wait until the medical treatment has reached finality; but, in many cases, we can commence training during his hospital treatment. But during the time that he is in the hands of the medical authorities, the work is, in the main, given for its curative value. Nevertheless, we can, and do, save a great deal of time by giving this a vocational or industrial bias. If I may take a minute or two, it may be interesting to point out the organization that we have for guiding a man towards the choice of occupation.

In each district, there is a District Vocational Officer, who is the representative of the Vocational Branch of the Invalided Soldiers' Commission. With him, is a medical officer specially detailed for the vocational work; and therein, you are much better off in the United States than we are in Canada. We have no Association of Industrial Physicians and Surgeons. You could have counted on the fingers of one hand, when we commenced work, the doctors who had had any experience in this line outside of a few men attached to large corporations. We have had to develop special men. This medical officer in company with the vocational officer, makes a study of the disabled man's remaining possibilities and of the vocations that are suitable for him. But we do not consider these two officers sufficient. We are, like the United States, a democratic country; so we have had to join to these two government officers, a layman; a local man of affairs; a man who knows the industries of the locality; a man who knows the possibilities of employment in that district; a man who knows something about the possibilities of labor troubles, for instance; a man whose local knowledge is such that it can be applied in a good many ways to the case of the individual soldier. These three men, the vocational officer, the medical officer, and the layman—and it is not always the same layman; we have a group of men in each locality on whom we can call on different occasions to sit with us—form what we call a "Disabled Soldiers' Training Board," which recommends that the man be trained for a certain occupation. As soon as the man receives his military discharge, he receives a scale of wages paid by the Invalided Soldiers' Commission so he has no worries about himself or his dependents during his training. That, we have found absolutely necessary. A man cannot throw himself into his training course with the energy he should, if he is worried about those who are dear to him.

Another thing that we had to settle was, that if a disabled man improved himself by his industry and overcame his physical handicap, it should not injuriously affect his pension. Our pensions are fixed according to the amount of the man's disability in the open labor market. A lawyer and a ditch digger who each lose a leg get the same pension. The ditch digger loses more by the loss of the leg than the lawyer, but we do not reduce the lawyer's pension—we endeavor to increase the other man's earning capacity by vocational training. Therefore it was decided that the pension should not decrease by reason of improved earning capacity from re-education.

Our colleges have, during the past year, come splendidly to our assistance, and have organized special courses for the men; usually short and intensive courses. The average length of training is six and a half months. But perhaps the thing of most interest to this gathering is a development which has taken place during the past ten or eleven months. When we had undertaken the re-education of about five hundred disabled men, we made an analysis of the occupations. At that time, May 1917, we were training men in thirty-nine different occupations; but we found that eighty percent of the men were being trained in about twelve occupations. We endeavored to find the reason for this. A good many wanted in-door occupations, such as stenography, typewriting, etc. A great many wanted to become chauffeurs and drive limousines. There were fashions in this; but the chief reasons for it were the ordinary limitations of the technical school or college. After all, the number of occupations that can be taught in the school is small, so we tried what was tried in France, and that is to place the men in the industries for training. We are succeeding; and now, instead of the men being trained for thirty-nine occupations, we have one hundred and ninety-seven different occupations on our list. That has been done by the co-operation of industrial establishments throughout Canada. We tried it in our industrial centers of Toronto and Montreal. We sent the men into the industries with the co-operation of their proprietors and superintendents and the labor unions. We went through the shops, to find just what job men with a certain disability were fitted for, and we have succeeded in placing men in the industries so that today we have a much wider opportunity for training. Moreover, the men are getting the best kind of training—training on the job itself.

We have a preparatory course, the men usually taking two or three months in getting used again to civilian methods; because the training of the soldier is wholly away from looking after himself. From the moment he enters the ranks, he is told when to get up, when to go to bed, what time to eat, and what to do. That is the reason why, if you take a man from military life and put him immediately on his own resources, he will often fall down. So we put him to work, at first, for only a few hours a day; and later, we have an eight hour day in our classes. The men are paid only if they attend. The pay allowances are made up on the monthly return of a man's attendance. That is, we think that if we can surround the men with the same kind of atmosphere and conditions that they are going to have when they go back "on their own" again, as we say, with no government control, this will be better for them. So, after this preliminary training of three months, or so, they are placed in an actual industry.

There are two or three other points that I should like to make. Two and a half years ago, we had nothing to go on; and my first line of approach was that which a great many other persons have since attempted. It was to try to discover a list of occupations for which men with a given disability might be trained. We have failed altogether to discover any such list. I mention that, because it seemed a good way to start out; but we found that we have to take every individual case on its own merits, taking into consideration every fact connected with it—where he was born, when he came here, what schools he attended, what work he has done, etc. We have not found any list of occupations for which men with certain disabilities can be trained. We try to place a man in his old trade, or something as nearly allied to it as possible. We try to conserve his powers, and train him in as short a time as possible for usefulness again.

There is another point: a war cripple is very often not what we are apt to think he is, from the pictures in the magazines. These men are not all suffering from the loss of arms and legs. We have not yet had fifteen hundred who have lost an arm or a leg. Our numbers are just over fourteen hundred. We find two leg amputations to one arm amputation. That, from the standpoint of industrial re-education, is important. The loss of a leg is not so serious, in rehabilitating a man, as the loss of an arm.

Of the men returned to Canada, about ten per cent have been found to need re-education for some new occupation. Of course, only the more seriously disabled are returned. Of those, about ten percent are men who have suffered the loss of an arm or leg. Fortunately, we have not a large number of blind. About fifty or sixty is the total number—not quite the number of blind in the recent explosion at Halifax in which sixty persons lost the sight of their eyes. Under a special arrangement with the English authorities, our blind men are being trained at that magnificent institution, St. Dunstan's, Regent's Park, London.

We have, therefore, to consider all kinds of disability. Some times, when visitors start in one part of Canada to see our work, they may go three or four days, and not see a man who has had a major amputation. These men are kept in one center until they are fitted with limbs. We have problems such as, I take it, the men of this Association have to deal with every day. About fifty percent are medical cases, and fifty percent surgical. The men suffer from all kinds of troubles.

We have at present a string of schools reaching from coast to coast. In every hospital, the civilian officer is present, carrying on, under the direction of the military surgeon, the beginning of the educational work. We have the problem of the sufferer from tuberculosis. For these men, we are doing what we are able to do in directing them toward some occupation in which they can keep themselves in comfort. We have no "light outdoor occupations" for these men, on account of the climate. If their former occupation was at all hygienic, we try to place them back in it or train them for some lighter form of it. If we cannot wo this, we train them for some indoor occupation; because, as I have intimated, on account of our climatic conditions, we have no light outdoor occupation in which a man can work the year around, and earn enough to keep him.

I cannot take up any more time; but it was with great pleasure that we recently welcomed in Canada about thirty educators from the United States, who under the auspices of the Red Cross are visiting our hospitals and schools. We hope that from our mistakes you may learn a great deal and avoid our early errors. We had little to go on. We had to make a trial, and have made some mistakes; but if there is anything that we have done that will be of service to you in the problems which you are going to have before long, it is at your command. It was with pleasure, personally and officially, that I accepted your kind invitation to come to you today and I thank you very much.

ADDRESS OF CAPTAIN RENE SAND, M. D.

Of the Belgian Army

LADIES AND GENTLEMEN: It is impossible for me to explain how I feel about America, and about everything which I have learned and felt here. We, the Americans and the Belgians, have surely one thing in common, and it is this: That once we have decided something, we make a stand upon it; we set our feet on it, and we do not give in. We Belgians have revolted during more than a thousand years against all the foreign domination which had been forced upon us, and the infatuation of Germany, in imagining that she could conquer us in something like three or four years—a nation that had been trained in revolt for centuries—was unbelievable. Such a thing was not possible.

Now I must explain why I am here. I am here because our reconstruction—and I mean by that the general reconstruction of the whole Belgian life—will be necessary; not that we shall have lost so many men, but that our industrial men are idle because they have refused to work for the Germans and cannot find any work except working for the Germans. Therefore, since three years and a half ago, they have been idle. That means that their occupation spirit is gone; their skill is gone. On the other hand, the Germans have taken all our machinery and have destroyed our factories. They have also made these deportations of which you have read. One hundred and twenty thousand of our men, which means one man in every fifty have been deported; and they have especially chosen for that deportation the most skilled ones. Their object is clear: to handicap us for reconstruction after the war. Just as they destroyed our machines and factories they now destroy our power by making the men lose their skill and habit of work. Therefore, the Belgian Government decided to send to this country several Belgians who could study the lines on which we are to rebuild our industries in the best possible way.

I had great expectations in coming here, but they have been surpassed. I have found so many suggestions in so many great advances already realized that I think our Commission will do a valuable work—and that will be a new bond between America and us.

RECLAIMING THE BLIND FROM WAR—FROM INDUSTRY

By Lieut.-Col. James Bordley, Jr.

Gentlemen, I have come to this meeting to talk with you about a subject which is very near to our hearts: The Replacement of the Blind in Industry. I come to the industrial physicians and surgeons because I hope and believe that the day is not far off when all employees will enter industry through your offices. I come to speak to you because I realize that you truly represent the human interest side of factory life. Sir Berkeley Monihan told us that the most important man in an army is the regimental surgeon: you are I believe the regimental surgeons of industry.

Before I proceed with my subject, may I not digress far enough to point out to you some of the important means of ophthalmology to industrial medicine?

For most of the old time company surgeons, prevention was not worth while. They labored only to protect their companies from damage suits resulting from injuries. You modern men have long since discovered that prevention of injury and disease is far less costly to your corporations than such professional camouflage. You have proved that prevention serves not only the individual but his fellow workers and your corporations.

Application of these measures should start with the examination preliminary to employment. Elaborate eye tests are not necessary. If you will determine the vision and the existence of communicable eye disease you have done your duty. Visual examinations are necessary not only to protect the man but also the employer. There are many cases on record of suits for damages and compensation, where claims based on the loss of vision have been disallowed because the defense has been able to prove defective vision before employment. The number of persons with defective vision prior to employment who have recovered damages, however, are not revealed in the archives of the courts.

The importance of this preliminary examination has been emphasized by the findings of the ophthalmic surgeons of the large railroads. Hundreds of men in positions of great responsibility are found with vision so defective as to be startling. The railroad careers of many of these employees are replete with serious accidents.

When you take a man with defective vision into a plant you must select his job, or you jeopardize not only his life and limb but you introduce a serious menace to the other workers. As an illustration I will point to an experience of my own: By chance I examined the eyes of a man who operated a traveling crane. He had no vision in one eye, therefore no idea of perspective. His crane had killed two men and injured three others. Of course, these casualties were charged to the carelessness of the fellow workers, but was the blame correctly placed? Clearly a man who cannot accurately judge distance should not operate a traveling crane.

Suits for damages have been brought against corporations by those who claimed they had contracted serious eye diseases from fellow employees. It therefore becomes essential to turn lids and examine eyes for such communicable diseases as, for instance, trachoma. The failure to discover such disease, if it exists, leaves the corporation at the mercy of the man.

When you admit men with defective vision you should place them where they will run the least risk of increasing their own handicap and thereby decreasing their efficiency. Indeed, gentlemen, you should advise against poor illumination for all employees.

There is little point in protecting the eyes of children through school without industry is going to protect the adult during employment. Nothing decreases one's efficiency more than eye tire, and nothing tends to this condition like poor illumination.

As a preventive measure some of you have burned up your roller towels and taken out your wash basins. The rest should follow suit. Running water and paper towels have doubtless greatly decreased contagious eye diseases.

In most plants some workman is looked upon as a magician in the removal of foreign bodies from the eyes. This, I fear, is not infrequently encouraged by the surgeon in charge. It is a bad practice. Cleanliness is just as essential in eye work as in any other surgical procedure. If an operative is to perform the function of foreign body extractor, he should be taught the importance of cleanliness and his work should be definitely limited to foreign bodies in the lids.

One is wise not to be misled by the large number of foreign bodies in the cornea that are removed without serious consequences. I can, as could any other ophthalmic surgeon, point to many eyes lost through corneal infection produced either by the foreign body or lack of cleanliness on the part of the doctor. It is important, in my judgment, wherever a foreign body has penetrated or torn the surface of the cornea, to carefully examine the tear sacs, and if pus is found the case should be referred at once to a competent ophthalmologist. I have removed six eyes in which it was not promptly recognized that simple corneal abrasions were being bathed with pus from diseased lachrymal sacs.

Foreign body injuries are productive of many curious conditions and none is more disturbing than the silent entrance of a small particle of steel or emery into the globe. By silent entry I mean that an eye can be carefully examined immediately after an injury and not the slightest evidence of puncture of the globe can be discovered. Such an eye may recover from the immediate effects of the injury and show no signs of trouble for days, weeks, or even months. When the almost inevitable inflammation makes its appearance, the history of the former trouble is forgotten or the surgeon disregards it entirely. An eye so injured may remain slightly red and troublesome. On at least three occasions in my practice I have had such cases referred as infectious conjunctival diseases. Gentlemen, I cannot be too emphatic in advising you to see or have used the x-ray in all doubtful or even suspicious foreign body cases. It can do not harm and it not infrequently saves vision and eyes. Remember that not finding a wound is not positive evidence against an intraocular foreign body.

In cases where I am suspicious, I am not satisfied even with a negative radioscopic report. I frequently resort to the giant magnet. This instrument should be used with care and by an experienced ophthalmologist only. If the foreign body is iron and has not become encysted, its presence can as a rule be readily determined.

Industrial ophthalmology is a large subject and pregnant with possibilities, but I must from the lack of time leave it and pass to the subject which really was the motive for my coming to Chicago. I want, gentlemen, to say a word about the replacement of the blind in industry.

There are few plants which have not had the misfortune to lose some one or more employees from accidental blindness. These unfortunate people have almost invariably been discharged either with or without pension, have been sent home to live or die as they pleased. No thought has been given to the fact that the only asset of these skilled laborers is their experience; that their only hope in life is to be given a chance to get back on their old job or in some similar work. For the one-armed, the no-armed, the one-legged, or the no-legged, there are jobs. For the blind there is only hopelessness.

This is not only morally, but industrially, wrong. A capable blind man should be given, and in the future I predict he will have to be given, a chance.

The war in which we are now engaged has wrought miracles, and none of these phenomena are more striking than the advancement of the education of the blind.

England, France, and Germany have discovered that the blind have an economic value and they have started out to utilize their services.

This country also is preparing a very sane, comprehensive plan for the re-education and replacement of its blinded sailors and soldiers.

The pre-vocational or school period will be lived in the military training school for the blind at Baltimore. The occupational life following discharge from the army, no matter how long it may be, will be supervised by the Red Cross Institute for the Blind, a national activity of the American Red Cross.

This Institute has started an industrial survey in an effort to discover occupational possibilities. When these possibilities are found, courses designed to fit the blind for the work will be put into operation in the military school. After the completion of these courses by the blind, where the work proves to be of practical value, the opportunity for trial employment under actual factory conditions will be sought. These factory trials will be arranged so as not to disturb production, and the necessary supervision of the blind will be supplied by our own industrial engineers.

Where a man makes good we will do our utmost to place him; where he falls down, he will be taught a new trade.

We do not desire a corporation to hire a blind soldier or sailor for sentimental reasons. We appreciate the fact that such jobs are evanescent. We want placement and retention to be on the basis of merit alone. In fact, we are proposing to relieve the employer of all embarrassment of discharging an incompetent blind fellow. The Institute will not only place and supervise him, but will likewise withdraw him if he falls down. Our organization is to be a permanent one and our responsibilities will not be shirked.

It is our hope that we can add greatly to the stability of blind labor. As an attempt in this direction we have organized a Savings Association, which will look after the finances of the blind sailors and soldiers, encouraging thrift, relieving the men of financial worry, helping them to buy homes, and advising them in their investments.

We all recognize that blindness is a handicap, that the blind lack the extreme productive ability of the sighted. If men with normal sight would always work up to the highest standard of productivity the blind could lay no claims to industrial employment, because they would not be needed. This we all know is not the case. Why, then, should not a capable blind man working six days in the week, producing as much as the average workman who seldom works not more than four or five, be employed? The short-sighted policy of industry in the past has resulted in thousands of blind men having no homes, being parts of no industry, whose existence is eked out in cheap lodging-houses. The needs of industry have been met without protection for the future of these laborers, who have steadily deteriorated mentally and industrially.

Mr. Gompers said to me some time ago, in discussing the rights of labor, that a man was at liberty to work for whom he pleased, where he pleased, and only so long as he pleased. That, gentlemen, is a succinct definition of democracy, and to that definition we must all subscribe.

Recognizing this, then, as a fact, it behooves the employer to make his work so attractive that labor turn-over can be reduced to a minimum. There is nothing so demoralizing to industry as migration. Migration is indeed a two-edged sword turned against the employer, because it not only diminishes production by its naturally disturbing effect, but in no less degree by the deterioration of the workmen who constantly shift their jobs.

The causes of migration are numerous, but the most important are bad plant conditions and unattractive home life.

The Red Cross Institute for the Blind is going to make a vigorous effort to see that living conditions at home are what they should be for the blind. By doing that we believe we will render a service not only to the blind but likewise to the community and to industry.

Now, gentlemen, I bespeak for the engineers who will conduct our industrial survey your hearty co-operation when they visit your plants. I hope you will advise and assist them so that we can derive the greatest possible benefit from the undertaking. May I suggest that you let no preconceived notions act as a barrier to the work? More, gentlemen, I ask that when our blind men enter your plants either for trial or permanent employment you will encourage and help them to lift the burden placed upon them by an exacting society, and that you will keep those charged with the industrial development of the blind informed as to the shortcomings of their charges.

There is no character of man who can render us greater service than can the industrial physician and surgeon and we have faith and hope, and we know that you will have charity.

Now I am going to show these pictures. The first picture is one that Arthur Pearson sent me from his blind school in London. The man examining that chicken is probably England's greatest expert in poultry raising. He is blind, and is instructing the officer to the left in poultry raising.

In arranging that scheme for poultry raising, the men have to do all the work. They have to build the chicken house and the coops and incubators, and take charge of the chick from the time he is born, right straight on up.

This is a picture sent me by the French. This man is a cabinet maker, who was just an ordinary carpenter before he lost his sight. He is now able to get work in cabinet making and his work sells on its merit. This is a cabinet shop which is controlled and run by the man whose picture I just showed you. These are all blind men, working in his employ. He is making more money today than he ever made before.

These men are studying anatomy and histology, preparatory to going into massage. In Japan, prior to the Japanese-Chinese War, the blind had a monopoly on massage; and they cried their wares on the street, just as peanut venders do.

This is an industry in which we are experienced ourselves; it is an armature winding plant in New Jersey. These men, Dr. Wheeler says, do splendid work. They make as much as sixteen dollars a week. Their work is piece-work, and is performed very satisfactorily.

This man is working in an automobile factory as a packer. He makes his own boxes, packs his material, and checks it, and does it to the entire satisfaction of his employers.

This is an old trade for the blind, that of broom making. In the modern broom shops, however, they use modern broom-making machinery. In the Pennsylvania Broom Shop for the Blind they make brooms by tens of thousands for the United States Government, in competition with sighted labor; and the brooms are very satisfactory. For this they get an increase in their wage. They use unprotected machinery. All the protection that was originally supposed to be necessary to protect blind men has been taken off. In two years, only one injury occurred and I learned from Mr. McMurtrie that similar accidents occur in a winding establishment every week when the men can see.

This is a Commercial School at St. Dunstan's, where men are taught typewriting, telegraphy, wireless operating, telephone operating, and a thousand other commercial things. Men have gone into the commercial plants, and are holding their own. We have this man whom we are much interested in. He was educated in this school, and is now one of the men in one of the leading powder concerns in Canada; and he is so satisfactory that they have increased his pay twice in the last two or three months.

This is an ordinary carpenter shop. I have shown you this to let you see the range of work in which the men are engaged. They make practically everything used in St. Dunstan's that is made of wood.

This is a knitting shop in France. These people are taught to run these knitting machines. They are then sent home and supplied with the necessary machines and yarn enough to begin work.

This is a shoemaking establishment in which the men are taught everything about shoemaking, from last to sole.

This is a practically new industry for the blind: net making. They used to make simple nets, but now make tennis nets, fish nets, and all kinds of netware, including tennis rackets. It is a simple and profitable thing for the blind to do.

DISCUSSION ON DR. BORDLEY'S PAPER

Dr. John E. Weeks, New York City: Permit me to thank you for the privilege of meeting here with you this afternoon, and to congratulate you on the size of your Association and the excellence of your programme.

I have listened with great interest to the paper of Colonel Bordley. In endeavoring to take the place of Dr. Casey Wood, I am afraid that I shall disappoint you very much. I had no opportunity whatever to prepare for the discussion, and I shall confine myself to a few remarks only.

The things of greatest importance, in my opinion, so far as the eye is concerned, are the preventive measures that have been taken up. A thorough examination should certainly be made of employees in all positions, and, if the findings in the examinations of the eyes are not favorable, the results should be made known to the employer. In many cases, of course, these do not bar the applicant from employment. Preventive measures, not only by examination of the eye, but also preventive measures brought about by education of the employees, enable them to meet the necessities of the situation and to avoid the danger of accidents or of infection which otherwise might occur. Measures for the protection of the eye are, of course, of great importance. They should be intelligently employed and applied wherever practicable. Fortunately, the introduction of unbreakable glass has gone far to eliminate danger in many of the mechanical arts where good vision and protection are necessary.

With these few remarks I shall content myself, and again thank you.

ADDRESS OF PROFESSOR GRAHAM TAYLOR

Of Chicago Commons, Chicago, Ill.

As the chairman of one of the large draft exemption boards in the city of Chicago, which registered over 12,000 men including nineteen nationalities, perhaps I may add something to your discussions. The cross-section view of health and economic conditions that the physical examination of these men has given is of great public interest. The order in which the causes of the disqualification for military service came is suggestive. We disqualified more men for hernia and defective vision than for anything else. One of the most significant causes was defective teeth. Men of twenty-one to thirty years of age presented themselves with few usable teeth, and when I told one man that, in order to save his life, he should attend to his teeth, I might have forecast his answer, having lived so long among the working classes. He said, "Why, I cannot afford a dentist." It emphasized the public service that Mr. Eastman of Rochester, N. Y., has done in building and supporting its fine dental dispensary to give every child in Rochester under fourteen years of age expert dental care if his family cannot pay for it. The time has come when the public health must be considered a national asset, when the defense and progress of the nation require that we shall keep our population well at whatever cost to the public or to the medical profession. Free dentistry in the schools will have to be a national policy. People struggling with poverty during the first generation after arriving in this country from the perilous experience of immigration seldom have any surplus for proper dental care, or the accidents of birth or death.

Men came to claim exemption on the ground of being "sons of aged and infirm parents," and we were treated to another surprise. "How old is your father or your mother?" we asked. "Forty-five," or "Forty-seven," or "Fifty," very often would be the answer. We found that these parents were prematurely aged. The line of industrial old age has pressed back into middle life under the stress and strain of our ever increasing pace of production. Only those who live close to the homes of the poor, as I have done for twenty-five years in this city, know the facts, which we should not be afraid to state.

I have watched with great interest the rise of industrial medical work. Having been close to Doctor Mock, I have been in touch with its development. While you industrial physicians have been doing this work in peace, you have been preparing for war, though you had no idea of this development now opening before you. Now you are receiving the emphasis which your warwork lays upon the national necessity for the extension of this work to all the industries of peace.

Financed by the Russell Sage Foundation, an industrial survey of the city of Pittsburgh was made a few years ago, which cost the labor of twenty experts for two years. They found there in that resourceful industrial center the highest death rate from typhoid in the United States during the preceding twenty years. The high rate of "accidental" death and injury in the steel mills invited investigation and disclosure. When the inquiry was finished, its results were graphically displayed on the walls of the Carnegie Institute. Around one of its great rooms ran long strips of white paper with black figures of the men, women, and children who had died in Pittsburgh from preventable causes within the period of the years reviewed. The procession of the dead aroused the city. The results of that survey, now elaborated into six volumes and published by the Russell Sage Foundation, have not been challenged. A former president of the Chamber of Commerce publicly said that Pittsburgh could better afford to have thrown one of its mills into the sea than to have lost by illness, injury, and death the skilled labor thus sacrificed through preventable causes.

The manufacturers of this country are waking up to the value of the man behind the machine, but none too soon or widely for the country's reputation or progress. Now we are beginning to state the case not in terms of philanthropy, but in terms of justice and business economy. Within the past few years there has been a great change of attitude by the manufacturing, mining, and transportation managers. The industrial surgeons and doctors can be in touch both with business men and with the laboring men and women and can keep them in touch with each other. Under the common stress and strain of war, as never before, we can put ourselves in each other's places. A program of national efficiency is now possible, with a beginning, a middle, and an end to it by which to forge our way to a better understanding and better conditions—and I am sure that you are among those forging ahead toward this goal.

Lt. Col. Mock: The Directors will meet immediately after we adjourn. That is, the old Directors. The new ones do not take office until the meeting closes.

The banquet will be at 7:30. The meeting is now adjourned.

Adjourned at 5:45 P. M.

EVENING SESSION

Dr. Francis D. Patterson, Harrisburgh, Pa.: At the meeting of the Board of Directors this afternoon, having received nominations, and being convinced that the Board of Health and the work of the industrial physician are, in the last analysis, one and the same thing, it recommended for election to Honorary Membership in the Association Dr. William A. Evans, of the American Public Health Association.

Lt. Col. Mock: You have heard the recommendation of the Board of Directors. What is your wish regarding the matter?

(It was moved and seconded that Dr. Evans be elected an Honorary Member.)

Before putting this motion, I would state that there were two other Honorary Members elected today, Sir James Mackenzie, of London, England, and Dr. Edward Martin, of Philadelphia, Pa. All in favor of this motion will signify it by saying "Aye;" contrary, "No." It is unanimously carried, and they have all been elected unanimously.

Dr. William A. Evans, Chicago: I thank you for the honor you have just bestowed on me. I realize the fact that it was not intended to be personal, but was intended to express your recognition of a condition. I thoroughly agree with the reason for your action; and, at the same time, I am thoroughly pleased with your action from the personal standpoint. The honor was bestowed upon me by reason of the fact that, in some measure, at least, I represent the American Public Health Association; and it was your desire to express your opinion that the work of industrial physicians, industrial hygiene, in fact, is a part of public health work. It is important at all times, and doubly so at this particular time.

I had the pleasure of looking in upon your meeting this afternoon; and I feel sure that there will be few sections assembled in this city during this week that will have so large a meeting as you have had, or will do so much effective work as you have done during the day. This is, of course, all the more remarkable, in view of the fact that your Association, if I remember rightly, is but three years old; that you have scarcely begun your existence as an organization. It is quite unusual that an organization three years of age should be able to gather together so many men, and so many men knowing very definitely why they are here, and so many men with very definite ideas as to the work that they are doing, and so many men bringing to the meeting definite information and definite views based upon experience.

Of course, we all recognize the fact that the American Medical Association struggled along for quite a quarter of a century before its existence was definitely determined. Year after year, it was a question as to whether the organization would continue its existence or not. The American Public Health Association met for five or six years, each year with an attendance so small that they did not have, at any time in that series of years, a quorum as provided for in their constitution. Eventually, not being skilled in parliamentary procedure, and recognizing the need of changing the constitution so as to provide for their smaller quorum, they dissolved the Association and then reorganized under a new constitution, a constitution which provided for a smaller quorum. Thereafter, they had meetings which were technically legal; their previous meetings had not been so. In contrast with that, your organization, born just three years ago, is holding here in this city a meeting which fills this room, to which meeting has been presented a group of valuable papers and discussion which was productive. Your men knew what they were here for; and the men who addressed you talked definitely and to the point, as the result of experience that they had had.

The significance of that is that the American Medical Association was formed at a time when the profession was not ready for organization. The advantages of organization and the advantages of periodical meetings had to be demonstrated. The profession had to be convinced of these advantages. It was likewise true of the American Public Health Association that it was organized in advance of a clientele, and was under the necessity of educating and training a group of men to serve as a clientele for the young organization. On the other hand, you came into being after the soil had been prepared. There were industrial physicians presiding over large institutions, large plants, large collections of men. There were men and women of broad experience who wanted a forum to which they could go with their experience. They realized that want. They had realized it for some time before your group came together and, in consequence, when you came together, you found a demand for such service as just this organization could render.

But I do not believe that that is the entire explanation of your very large, enthusiastic and productive meeting of today. You have been so unusually successful because of the fact that it is patently known to those who are closely in touch with affairs, as well as by those whose touch is more casual and incidental, that there is need now for wisdom in the service that is required for the conservation of the man power of this country; and a general recognition of this fact has driven you here to this center, for the time, just as in other great epochs in the world's history men have been drawn together by convictions that sometimes have not been expressed at the time, but have been since. A need for your services, and particularly a need for such a forum of discussion as you have had today, is always apparent; but it is doubly apparent in the face of the great war.

I recognize, gentlemen, the reason you have elected me an Honorary Member of your Association. Nevertheless, I want to thank you personally for the honor that has been accorded me.

ADDRESS OF DR. OTTO P. GEIER,
Director
Committee of Industrial Medicine and Surgery, Council of National Defense

I want to take a few minutes to tell you how the services of the industrial physicians are likely to become a war measure. Last October Dr. Franklin Martin, representing the Council of National Defense, called into being a Committee on Industrial Medicine. Nothing was accomplished for some time but in the past few months, we have been asked to present to the Medical Section of the Council of Defense a program that we thought would benefit the war production. We attempted to devise a broad constructive program, but all we did was based fundamentally on the sound things that you men are experiencing every day in your work. That program finally met with favor, and presented itself somewhat as follows:

In the first place, it was obvious that there was no federal centralization of health work for the purpose of the war. There were at least five governmental agencies carrying on health work. At no time had it been possible for any one of these to capture all the appropriations and all of the power. We considered that it would be possible, during the period of the war, to get the representatives of the five bureaus together, working on a committee, and in co-operation work out the broad problem of public health. We felt that labor, organized industry, organized medicine, and organized industrial medicine should also be represented so as to secure the speedy and full adoption of the program. The final personnel of the Committee was as follows:

Public Health Service—Dr. Joseph Schereschewsky, Chairman.
Department of Agriculture—Dr. Carl L. Alsberg.
Department of the Interior—Mr. Van H. Manning.
Department of Commerce—Dr. W. A. Davis.
Department of Labor—Mr. Royal Meeker.
Organized Industry—Mr. Magnus Alexander.
Organized Labor—Mr. J. W. Sullivan.
Organized Medicine—Dr. Charles H. Mayo.
Organized Industrial Medicine and the Army—Lt. Col. H. E. Mock.
Dr. Franklin Martin, Dr. F. F. Simpson—ex-officio.

This Committee had a number of meetings and adopted the following report.

INDUSTRIAL MEDICINE AND SURGERY AS A WAR MEASURE

Report of the Director, Dr. Otto P. Geier, May 27, 1918

The Need of the Hour—More production of war materials by the second line of defense.

Slowing Down of Industry Caused—

1. By excessive labor turn-over. Men drifting from shop to shop, therefore untrained and with low output—more subject also to accident on successive new jobs.
2. By physical breakdown—
   - a. Due to unsanitary conditions of shop and homes (lack of medical supervision).
   - b. Due to lack of early recognition and prompt treatment of ailments leading to invalidism.
3. By absence from work—
   - a. Due to preventable accidents.
   - b. Due to failure to secure prompt and efficient surgical attention when injured.
4. By lack of output because of those killed or permanently disabled (number said to be more annually than thirty times the number of soldiers expected to be permanently disabled, and for which millions have been provided in the way of reconstruction facilities).

PRODUCTION CAN BE DEFINITELY *SPEEDED* UP BY PROTECTION OF THE HUMAN MACHINERY FROM PREVENTABLE AND UNNECESSARY WEAR AND TEAR, DISEASE AND INJURY

The non-effectives in the average industry are known to be at least 3% or thirty in each thousand on account of sickness (study of 750,000 workers, U. S. P. H. S.). May go as high in others as 6% of non-effectives. Add to this factor an additional 2% for absence, falsely claimed to be due to sickness; then add one-half of 1% for absence on account of lost time due to accidents and we have a total absence of 6% to which medical men can direct their efforts.

The *principles* of *industrial medicine* and *surgery* intelligently applied can reduce this 6% loss to 3%, making a gain of 30 workers on the job in every 1,000.

Additional Saving—A cleaner plant and healthier workmen will result in a great output per man.

Other By-Products—Better relations between employer and employee—more sympathetic understanding—comforts and conveniences, cafeterias, etc., supplied; all producing a better *esprit de corps* resulting in less labor turn-over.

The protection of the health of the community—women and children—quite as essential as the health of the workers. Fully 30% of the effective medical and surgical capacity of the profession has been drawn into the Army. Twenty-four per cent of the visiting hospital forces has been called into the service. This indicates that the civil population does not possess adequate medical service. Under strain of war conditions, disease and injury are increased. To meet the discrepancy, a method must be found by which every physician not in the Army may give his maximum result with his minimum effort, so that the community may be adequately protected against disease.

The placing of the physician in industry accomplishes that need. By applying his preventive measures to the large industrial unit on an intensive scale, the industrial physician assists the community in its health efforts, lessens disease, and therefore lessens the strain on the physicians in private practice.

OUR PROBLEM, THEREFORE, IS:

1. To meet the military need for greatly increased production.
2. To offset the drain on the man power in industry brought about by raising the military forces.
3. To assure adequate medical service for the civil population.

TO MEET THE PROBLEM, THE GOVERNMENT MUST:

1. Provide against unnecessary human waste in industry and society during the war.
2. Increase output by maintaining workers in good health.
3. Avoid preventable deaths and disabilities from accident and disease.
4. Restore to full producing power in the shortest possible time the sick and injured workers.
5. Provide healthful places in which to work.
6. Provide healthful homes and communities in which to live.

METHODS OF ACCOMPLISHMENT—

Through the influence of the Advisory Committee and through the efforts of the Director, we should secure:

1. *Centralization and co-ordination,* with stimulation of all present health agencies (Federal, State, and Local) in greater effort toward protection of the industrial workers and civil population. We should use influence of War Councils, State and Local Councils of Defense to further program of the Medical Supervision of employees.

2. *Enlistment and co-operation of the Public, of Industry, and of Labor:*

    a. Announcement of the program by the President.

    b. Outline of plans to the Associated Press.

    c. Outline of purposes prepared for medical journals.

    d. Material prepared for Technical and Trade Journals:
        - Labor Press,
        - Insurance Company publications,
        - Sociological Journals,
        - National Safety Council Bulletins,
        - Department of Labor publications,
        - Public Health Service publications.

    e. Dissemination in bulletin form of our present knowledge of the scope of industrial medicine and surgery with its economic advantages to industry and labor, to be sent to:
        - All industries employing 500 or more men,
        - Health Departments,
        - Chambers of Commerce,
        - National Health Organizations,
        - Labor Organizations,
        - Trade Organizations,
        - Ten District Chiefs of the Ordnance Department for submission to their contractors—same for Navy, Shipping and Aviation Departments.

3. *Establishment of Standards:*

    a. Preparation and distribution of standards to cover the field of "Industrial Medicine and Surgery," emphasizing the occupational diseases of war industries. These standards will include that wealth of material prepared by the various sub-committees on Sanitation and Safety, Committee on Welfare, Samuel Gompers, Chairman.

b. Establishment of minimum standards of plant dispensaries and medical personnel.

c. Adoption of standard forms for use by industries in record of accidents and disease. (These records will be the basis for the first reliable and uniform statistics on morbidity and accident).

4. *Personal Contacts:*

    a. Addresses before manufacturing and trade organizations—national associations, medical and social.

    b. Conferences by industries for the discussion of standards of health and safety.

5. *Field Work* (Most important of all the measures):

    a. Surveys of large industries engaged in war work by expert field workers, with recommendation to industries inspected. Copies of reports to go to the branch of the War Department interested in the output of that respective industry.

    b. Study of community sanitation to determine its responsibility towards the workers' health.

    c. Organization and use of the Volunteer Medical Service Corps in work indicated by "a" and "b."

    d. Mobilization of the medical forces of the community to properly distribute burden of adequately caring especially for the health of the industrial workers and their families.

6. *Schools of Industrial Medicine and Surgery:*

    a. Propaganda to popularize courses of study for the specialty of industrial medicine and surgery in existing colleges.

    b. Arranging for clinical courses of intensive training in industrial medicine through men carefully selected from the Volunteer Medical Service Corps.

7. *Legislation:*

    Study of Industrial Hygiene Legislation of the several states for purposes of recommendation.

PERSONNEL OF ORGANIZATION—

A Director (whose relationship to the Committee shall be that of a President to his Board of Directors).

An Executive Secretary with industrial training and ability.

A Staff of Technical Advisers.

A Staff of Field Workers—Present industrial force of U. S. P. H. S., greatly enlarged, and such additional men as our funds will permit.

A Staff of Speakers—volunteers.

The Advisory Committee on Industrial Medicine and Surgery.

Unanimously approved by Resolution of Committee, May 27, 1918.

Now that is the Committee's conception as to a method of intensive work on the subject of industrial workers' health. The report was unanimously adopted by the Committee on May 27, 1918, and referred to the Council of National Defense for approval. Since then, it has been under discussion by the Advisory Commission, and will now have to await the action of the Council of Defense. Finally the program will be laid before the Administration. If it finds favor with the Administration, it will go a long way toward that goal which doctors have been praying for for twenty-five years; and that is the establishment of a real national Federal Health Department.

THE MODERN METHOD OF RETURNING THE WAR CRIPPLE TO ECONOMIC INDEPENDENCE

By Mr. Douglas C. McMurtie
Director Red Cross Institute for Crippled and Disabled Men

For one who was interested in the welfare of cripples for some years prior to the outbreak of the war, the session this afternoon was a revelation; it revealed the grateful fact that we are now entering on a new era in our attitude toward the crippled and the blind. A good deal has been said in description of various special phases of rehabilitation; and my task has been thereby narrowed, because not wishing to repeat what others have said, I must see whether I can find anything else that deserves being spoken of. That will be a hard problem, but in the endeavor to solve it I will tell you, first, of the historical evolution of welfare work for cripples, and second, of some of the social aspects involved.

The thing that impresses one most, in looking into the history of the disabled man, is the wretched treatment he has been accorded in the past. Almost uniformly, he has got as shabby a deal as a man could get. From the superstition of the East Indians, who would take all men physically unfit and turn them out to perish, to the modern attitude which relegates cripples to selling shoestrings on the streets, there is a change in degree, but not in kind. All through history, the cripple has got the tail end of things. The ancient Hebrews left him to beg by the roadside; Medieval kings gave him as employment the vocation of court fool, or jester. The disabled soldiers of European wars were usually left to starve after the war was over. During the reign of Louis XIV, an invalid's home was built for them; but they were left there in idleness and misery. Later, the pension system came in; and the nations acknowledged their debt to the men disabled in war, and discharged it by paying them a niggardly sum, which simply raised them a degree above beggary. This condition has existed up to the present time. Even men disabled in recent wars have joined the ranks of mendicants and tramps. Any measure of relief was simply palliative, an endeavor to excuse the situation, and not an endeavor to put the men back on their feet.

Almost the same has been the lot of the victims of industrial accidents. Only in recent years has there been any effort to improve their situation. With the increased industrial development of the country more and more men came to be injured; yet for many years, nothing was done for them. They did not even receive compensation in any form. Finally there began to be felt two helpful influences. One was the safety-first movement, which tended to reduce the number of accidents; and the other was the compensation legislation, which reduced the misery following after accident. The latter, however, has after all been a failure when considered as constructive aid. The injured man has been paid some money to live on for a certain period, but he has not been put back into usefulness, or into happiness, or contentment. Now, I am glad to say, we have a new feeling of responsibility. We know that the only real compensation is to put him back into useful employment, and that is the theory on which we are working today.

We do not think that he should be put in some makeshift employment; that we should find him a job as a watchman or elevator man. We must consider carefully his remaining physical abilities and work on them; and if we study each case with care, we shall find that even the most seriously disabled can be put in a process whereby he will be able to perform all the work required, in spite of his physical handicap.

This new attitude is a comparatively recent development. It may be said to date from ten years ago; and the first manifestation of it was in Belgium, where there were founded teaching workshops for disabled cripples. In Europe compensation is a state affair, and the state did not see the economy of paying insurance money to partially disabled men over long periods, when it could take the men and, by giving them a little special training, put them back in jobs where they could earn as much as before. One school was established at Charleroi; and another in the province of Brabant. Captain Sand tells me that the latter did not get into operation, but was just ready to start when the war broke out. There were also two or three workshops in France which gave employment to disabled men and, while doing so, trained them along the lines that they were found to be fitted for.

Work of this character received an impetus from the war; and the true rehabilitation of the disabled dates from August 1, 1914. The first reeducational institution was founded at Lyons by M. Edouard Herriot, who found it impossible to place in employment a lot of soldiers then in the city, lacking a limb or otherwise handicapped but in other respects perfectly healthy. These men could not go back to their former jobs, and he could not get employment for them unless he trained them. He therefore started a training school. There were only three pupils at first, but the school grew rapidly, and soon opened a suburban branch where three or four hundred pupils can be accommodated. This institution served as inspiration for hundreds of other schools scattered throughout Europe. There are now one hundred and fifty in France alone.

Re-education is a very popular word. It was originated by the French, and taken up by the Italians and British. It means education for a new trade, to meet new conditions. France was the first to act in this matter and the work developed very rapidly there, following along the lines of the original school at Lyons. Schools were founded by municipalities or departments, or by almost any agency that became interested in the matter. Only one could be called national, and that is the Institute at Saint-Maurice on the outskirts of Paris. These scattered schools, excellent as many of them were, were defective as a system of re-education through the lack of uniform control. The courses would be shorter in one than in another. One school would be well managed, and another not. In other words, a French soldier had a different chance in one city from that which he would have in another. The work was not national, but municipal. To make the work uniform the French Government organized a department known as the National Office for Discharged and Disabled Soldiers. This department unfortunately has not had much authority for financial backing. It has sent out questionaires and asked the schools to standardize, but the situation has not changed very much.

Since the Italians entered the war later than France, they could profit by France's experience. At first a federation of committees kept the local schools pretty well bound together; later a national board was formed under the government. In Germany, the work is voluntary, and there is no governmental direction. Each school works with the Medical Corps in its own district, and under different rules. A man in Berlin attending one of the schools will be turned out as soon as his medical treatment is completed. If treated in Munich, he will be kept in the hospital until his economic training is completed.

In England, the situation is very interesting. When the first British soldiers came back, they were allowed to go out on the streets without any care, commended to the graces of different charitable organizations. One had been particularly organized to take care of the men from the South African War. It did its best; but the problem was of greater magnitude than it had ever been called on to meet, and it could not come up to the necessities of the case.

So about the second year, Parliament formed the Statutory Committee, which was a government body, and gave it a small fund with which to work and instructions to collect the rest of the money necessary from the charitable public. It was difficult work, because the public said, "If the Committee is going to do it, let the money come out of the national treasury." Finally the Statutory Committee was abolished and the work turned over to the Ministry of Pensions, and paid for out of the national treasury.

The only country among the belligerents which allowed none of its soldiers to be dependent on private charity was Canada, which placed the work in the hands of a commission, later called the Invalided Soldiers Commission, described by Mr. Kidner this afternoon. It is to the great credit of Canada that, from the first, her soldiers have not been dependent on charity.

The American program, as far as it has gone, was described to you by Colonel Mock this afternoon; and there is no need of my going further into that. I may be pardoned for going into my own share in the work, which has been in an experimental school started nine months ago. It was started because it was thought that the national scheme might be slow in getting under way, and that this school might do some useful experimental work, and clear away some of the troubles that might be encountered. It has been in operation for nine months, and has been active for six; and already it has undertaken something that I know will be of interest. It is not solely for war cripples, but for all crippled and disabled men. Already we have classes in welding, printing, moving picture operating, and mechanical drafting. The latter is the most interesting of all. It was started to meet the needs of one-armed men. Many authorities told us that drafting was not possible for one-armed men, but it is; and they get along very well.

How do you train a cripple for self-support? With regard to selecting a trade for him, there are two things that I wish to speak of. The first is the necessity of treating the man as an individual and getting his co-operation. There was a good deal of talk early in the game about keeping men under military discipline and making them take up a course in some new occupation. It was the simplest way, they thought; but in reality such a policy would be suicidal. It is necessary, in order to make training successful, to arouse the man's enthusiasm; and for that reason, he must make the choice and take the training voluntarily. Perhaps, by this method, one man out of thirty may get away; but if you put real men on the job as vocational advisers, have them make the man's acquaintance, get into his confidence, you can get nearly a hundred per cent of the men to choose training, and when they do, they go at it enthusiastically and get five times as much out of it.

Secondly, you want to do everything possible to build up his character, his initiative, his judgment, and his responsibility. To do that you have to allow him some freedom. I believe in playing the game with him, rather than pushing him through it. When men are properly handled, when they see that the spirit of the people in the institution is to work with them, their reaction is good, and they are as cheerful and happy as one could wish.

I should like to tell you one story. When a Canadian fellow, all shot to pieces, paralyzed from the waist down, and with a gunshot wound in the head was passing through London, he was taken from the train at the station. He was supposed to be supported, but they let him fall, and he rolled down the steps. The doctor rushed up and said, "Are you hurt?" He said, "No, doctor, never mind; it's all the same as massage."

Finally, I wish to give you some idea of the spirit of the cripple. I do not think I can give this any more clearly than by telling you of some gatherings we had in our institution in New York. No one can help a cripple so much as another cripple. The same thing applies to the blind, as Colonel Bordley says. Last year and this we had a number of cripple parties, for cripples, and by cripples. We invited men who were down and out, who had fought their handicap and lost; and also men who had struggled with their handicaps and won out. Many had been up against difficulties which could only be overcome by men with great initiative and character. The men who won out have had a tremendous influence on the others. We find on the day after one of those parties that the applications for training are trebled. We have had at these meetings a considerable array of talent. One of the speakers is going to be well known, because of his achievement and the encouragement that he is giving to other men. When a boy, this man was out in a blizzard, lost his way, and froze his extremities. Both legs had to be amputated, also one arm and four fingers of the other hand. He faced life in the poor house. But he told the authorities that if they would give him a year in college he would never cost the county another cent. He has since become speaker of the House of Representatives in the state of Minnesota and is now president of one of the largest banks in that state. He says that if your heart and head are straight, the physical handicap does not count.

Another speaker had lost both arms. One was a high arm amputation, and the other a low. After his accident he had gone about trying to make a living and had been beaten back in every possible way. One day Lou Young went to the Bureau of Licenses and said that he wanted to open a news stand in Union Square. They said, "You could not carry it on, but we will give you a license to sell pencils," which is really a license to beg. He did not accept that as final, and later got a news stand license, went into business, and became very successful.

These friends of ours have been put into motion pictures. They have been filmed by Captain Arthur Samuels of the Surgeon-General's office.

Once after my moving picture operator had shown the picture of Young, the man I have just told you about, he came out of his booth, and said, "I want to add something to that. I came out of the subway at Union Square and bought four papers, (they were one cent each in those days), dropped a nickel and went on; and he ran after me and said, 'Hey, mister, here's your change, this is not a charity joint.' " That is Young's spirit. His dexterity with his stump is remarkable. If you drop a dime on the floor, he will pick it up. He dresses himself and does everything, and he uses no artificial hand. He gives our men the stirring message: If you keep a stiff upper lip and go to it, you will make good.

Another speaker had lost both arms in a railroad accident. One amputation is high up, part of the shoulder being gone. After his accident on the train, he was reduced to begging; he went from house to house, and people were willing to give him something in the way of charity; but no one would give him a chance to work. When he asked business men, they would say, "We have no jobs today," when he knew they had plenty. Finally, he went to a friend of his father's and said, "Let me show you that I can do something. I do not want any pay." The man said, "All right; see if there is anything you can do." So he went where a gang were laying paving, and found one job was merely to check the amount of stuff laid. He demonstrated that he could do that, made good on the job and was taken on the pay roll. Meanwhile he studied law at night, and was elected justice of the peace. Later he was three times elected county judge of the county of Dallas, Texas. For some time he has been working on appliances and has invented his own arm device, with which he does everything for himself. He eats at the table, dresses himself, and has a special device by which he can put on his own collar and tie. He even prunes his own peach trees. This last man tells us that the physical handicap is nothing compared to the handicap of public opinion; that a loss of limb is inconsequential as compared with the burden that society puts on the disabled man. We know that to be only too true. And it is going to be true, unless we are careful, for our returned soldiers. When these men come home, it will be the old story: "You have done your bit; the Government ought to support you; you do not want to work hard and take training; what is your pension for?" Friends will say, "Don't let them put anything across on you." The family will say, "We don't want you ever to do any work again;" and in case the man does try to get a job, he will be turned down by employers. Perhaps you say, "Any movement to help the disabled soldier will get a patriotic support from employers," but I can see them now, a committee of employers, saying, "We have a dozen returned boys from the front and we must take care of them; you should take six, and you take four." Then one of them goes back and says to his foreman, "I have six cripples to find jobs for;" and he will have six doorkeepers added to the plant. That will be making charitable jobs, with no chance of permanence, because the patriotism of the employers will gradually fade away. The problem cannot be solved so easily. If employers want to do their patriotic duty, they must give men a real chance, and not hold out a charity job. We must not let the society ladies entertain the men too much either. That has been a pest in all belligerent countries. Society women who do that are preventing the men getting back on their feet in the right manner, and if anything is unpatriotic, that is.

We know from the results so far attained what can be done. We can take these men and give them a real trade; and with the right kind of effort we can put them back on the job. Now it seems to me that one of the most important things that we have to do, and one that has been too much neglected in other countries, is to make a concerted attack on public opinion. We need the help from people like you, with whom we do not have to argue. We must see that our returned boys are not forced into the ignominy of a charity job, but are given real, useful employment; and on our success in that will largely depend the failure or success of our reconstruction program.

PRIZE THESIS

THE RESPONSIBILITY OF THE INDUSTRIAL SURGEON WITH REGARD TO THE TREAMENT OF FRACTURES

By Russell S. Ferguson, A.B.,
New York University and Bellevue Medical College,
New York City

With one exception, no injury in the field of industrial surgery is more frequent than fracture, that exception being injuries to the soft parts. Unless the latter class of injuries be complicated by infection or fracture they entail only a short period of disability, and that may be only partial. When injuries of the soft parts are complicated by infection the period of disability due to the injury is increased. However, under the influence of the new, or rather revived, antiseptic treatment of wounds in war, this period of prolonged disability due to infection is being avoided in many cases and considerably shortened in the majority. Great advances have been made in the treatment of such types of injury and are making themselves felt in the decreased economic loss to the working man, his employer and to the working men's compensation insurance companies.

Can the same be said of the present day treatment of fractures, and the manner in which they are handled by the industrial surgeon?

From the standpoint of time lost due to injury, fractures become the predominant type and injuries to the soft parts occupy a position of far less importance than their frequency would indicate.

No type of injury sustained in the pursuits of industry, entails more loss of time per case than does a fracture. The average period of disability, and which disability is in no sense partial, is at least twice as long as the average period of disability due to any other given type of injury.

In an investigation conducted by the U. S. Department of Labor[1] concerning accidents and accident prevention in the iron and steel industry, it was found that the highest average loss shown by any injury was that due to fracture. Quoting this report, we find: "That the relative severity of injuries is best illustrated by the consideration of the time lost as a result of them."

Fractures were found to constitute 2.6 per cent of all injuries. The average loss of time per injury was found to vary from two days for asphyxia to 55 days for fractures, the average for all injuries being 17 days. The following table will give an adequate idea of the economic loss due to fractures as compared with other types of injury. The figures are based on reports from 130 iron and steel plants for two years, ending June 30, 1910; and from one plant for six years, ending December 31, 1910.

AVERAGE DAYS LOST FOR SPECIFIED KINDS OF INJURY IN ALL PLANTS REPORTING TIME LOST

Kind of Injury	Number of Injuries	Days Lost	Average Days Lost Per Injury
Eye injuries	1,056	9,640	9
Fractures	497	27,461	55
Injuries to hand	4,908	65,146	13
Injuries to foot	3,306	52,584	16
Injuries to other parts	3,969	51,124	13
Dislocations	555	7,888	14
Burns	2,842	53,169	19
Asphyxia	710	1,169	2
Other injuries	1,716	23,955	14
Total	19,559	292,136	17

These figures are drawn from a sufficiently large number of plants of a representative industry to indicate that fractures are the predominant type of injury from the standpoint of the duration of the disability following.

An average of 55 days total disability for each fracture is a serious consideration, and every effort should be made to reduce it. That some factor must have entered into the determination of this average, to render it as small as it is, is quite evident, for the figure in no way corresponds to that obtained by the Fracture Committee of the American Surgical Association.[2] They found that the average period of disability varied from 8 weeks for fractures at the elbow to 26 weeks for fractures of the neck of the femur, the average for all fractures being 15 weeks, or 105 days. It will be seen that this average is approximately twice as long as that found by the Department of Labor. The Fracture Committee of the British Medical Association found the average period of incapacitation to be even higher, 29 weeks or 203 days. Their analysis was based on the examination of 1,375 cases of simple fractures of the long bones.

The discrepancy is accounted for by the fact that the Department of Labor investigators considered only simple fractures of all bones and included many fractures of the phalanges, ribs, metatarsals and clavicle. Also their classification was not very accurate, many fractures being included under other headings. The Fracture Committee of the American Surgical Association on the other hand analyzed the period of disability resulting from both simple and compound fractures of the long bones only. Their analysis was based on the examination of 1,745 cases, while the Department of Labor considered only 497 cases.

The inference is therefore permissable that the average period of disability will range from 55 days for simple fractures of all bones, to 105 days and even 203 days for simple and compound fractures of the long bones only.

Having shown that fractures are the most serious type of injury from the standpoint of loss of time involved in treatment, which the industrial surgeon is called upon to treat, we may consider what factors contribute to the period of incapacitation.

That a fracture has a certain irreducible minimum of time necessary to repair, due to the slow rate at which osteogenetic activity and calcification of the callus proceed, is undeniable. This limit of time necessary to repair, however, is shorter by far than the average period of disability consumed in treatment and the attainment of a functionally useful member. How often does a stiff joint, an atrophic and weakened musculature, an inch or two of shortening, to say nothing of the more serious complications of treatment such as non-union, vicious union or an ischemic contracture, delay the rapid attainment of a useful limb and the termination of disability? Can any surgeon substantiate the claim that he has treated a single case of fracture wherein some slight alteration in treatment might not have resulted in the accomplishment of a better result in a shorter period of time?

A decade ago it was evident from the literature that the then existing treatment of fractures was not entirely satisfactory, and that the results attained showed few earmarks of progress. Have conditions improved since? In a very general way results today are slightly better, but has the treatment of fractures progressed apace with other fields of surgery? The state of treatment ten years ago was chaotic; today it is little better—perhaps worse from the standpoint of the number of divergent methods employed in attaining results which even our best surgeons can classify only as "good, moderate, or bad."[3] The literature may be scanned for hours and days, and nowhere can one find a satisfactory comparative analysis of fracture treatment with a view of determining what particular type of treatment is best adapted to the accomplishment of the ideal result. Yet the literature is full of methods of treatment for every type of fracture, divergent in their conception as day and night, and usually based on an insignificant number of cases. Why should such a condition exist? Why should there be such great variations in treatment and still greater variations in the nature of the results obtained? The reasons are quite evident. There are two obstructions to progress, which are:

1. The attitude of the medical profession with regard to the treatment of fractures.
2. The fact that there is no standard by which results of different types of treatment may be satisfactorily compared.

For our purposes the medical profession may be roughly divided into two classes. The first, those who believe that the proper treatment of fractures demands a special training in the problems peculiar to fractures, a special knowledge and a special surgical equipment. The second group comprises those members of the profession who believe that any one with a medical degree can handle a fracture efficiently.

Neither group is without its faults.

To the first group we must attribute the best results of treatment. They who are possessed of a wide experience and are constantly giving time and concentrated study to the treatment of fractures are bound to procure a more nearly standard result for a given fracture, and in a shorter period of time, than one who only possesses a passing familiarity with the pathogenesis, anatomy and physics of fractures, and whose only equipment is the wood-pile from which they construct diverse forms of apparatus whose general shape and field of usefulness they but indistinctly remember.

The first group, the fracture specialists, however, are responsible for the ever increasing number of surgical and non-surgical procedures, the increase being out of all proportion to the rational demand. This condition is perhaps the inevitable outcome which continual practice, experience and study, produces on the inventive mind. The trouble lies in the fact that such progress is only *individual progress,* and a procedure which may be highly successful in the hands of one trained man, may be an utter failure in the hands of other members of the group.

They are responsible for not affording a standard comparison of all their many forms of treatment so that those procedures which do not tend to improve the average result may be eliminated. Each man is but a standard and a law unto himself and his work may tend toward his individual progress; but it certainly does not tend to improve the average result of treatment by his co-workers for he affords the group absolutely no comparable standard of determining whether his methods of treatment are better or worse than those of his contemporaries.

The second class of men, those who believe that no special knowledge of, or practice in fracture treatment is required, have little in their favor. They see a trifling number of fracture cases a year, they apply to each that panacea, a splint, usually with a total disregard of the physics and anatomy of the case, and they condemn each patient to an excessively long period of incapacitation.

One can hardly subscribe to that type of treatment as being progressive. Many cases so treated come to secondary operation to restore function at a delayed time, which should have been secured weeks earlier had the case fallen into trained hands. From this group who take no special interest in fractures and yet who invariably treat those cases which come their way, one cannot expect any effort to secure a standard type of result, or any standardized effort at treatment.

One would expect, and it is perhaps true, that the majority of industrial surgeons fall under the first classification. As already pointed out, fractures constitute the most frequent type of injury but one, which the industrial surgeon is called upon to treat. From such a wide experience it is unbelievable that any member of this class of surgeons should ally himself with any other group. They must take an interest in and spend considerable time in the study of the large number of fracture cases that come under their care.

Still the industrial surgeon has one fault in common with the more restricted class of fracture specialists. He makes no effort to define what the standard result of a given type of fracture should be. He also makes no attempt to classify his results of treatment on any basis which will be comparable with those of his colleagues. The industrial surgeon is therefore also but a standard and a law unto himself with regard to the treatment of fractures, and so far, as a class, has made no effort to obtain standard results or standard methods of treatment.

As already hinted, the second obstruction to progress in the field of fracture surgery, is the fact that there is no standard by which results of different types of treatment may be satisfactorily compared. Perhaps this statement is best qualified, for there have been attempts made, not to set such a standard, but to establish a method of comparison so that a standard may be determined. These will be considered later. The fact remains that there is no such standard now in existence. Were there one, how easy it would be to define with precision just what percentage of the normal function of a limb should be regained after a given type of fracture, in order to constitute a standard result. How easy it would be to determine accurately the duration of disability following a particular type of fracture. Knowing these things it could be stated in all fairness, that any method of treatment which did not insure the return of a definite percentage of the normal functional capacity of the limb, after fracture, and which did not terminate the period of disability inside of a specified number of days, was inadequate and should be discarded in favor of some form of treatment which would insure these results.

Let us suppose, for example, that it had been determined by the comparative analysis of a large number of case records of Colles fracture, that the average result should yield 100% function of the elbow joint and 91% of the normal function of the wrist, and that the average period of disability due to that fracture should terminate within 30 days. A case of Colles fracture presents itself for treatment. Let us suppose that we elect to treat the case by reduction without an anesthetic and without X-ray control, by retention in padded wooden splints, and that we use no baking or massage during the extent of the treatment. Under such treatment we secure 97% of the normal function of the elbow joint and only 68% of the normal function of the wrist, and the period of disability extends over 63 days. The conclusion is that our method of treatment did not accomplish nor improve on the standard result and it should therefore be discarded in favor of some method which will at least equal the standard result. If we do not, we condemn our patient to an excessively long period of disability, we make no progress individually neither do we add anything to the progress of fracture surgery. On the other hand, let us suppose that we and our colleagues treat a large series of Colles fractures according to a certain method of our own selection, and we consistently obtain a functional result better than the defined standard, the period of disability in each case terminating with 24 days, then we have truly made progress. We have a method of treatment which we can publish for the general use of the profession which will raise the standard result of Colles fracture to a higher level. We could rightfully insist that any method of treatment which did not equal that standard was not as good as ours. In other words we have established a new criterion by which all methods of treating Colles fracture should be judged. That is real progress!

How is this Utopia of fracture treatment to be realized?

Surely not by allowing case after case to pass under observation without having obtained in permanent form a detailed report of how the case was treated, the exact duration of disability, and a careful analysis of the functional end-result as compared with the opposite normal limb. Certainly not by standing idly by and watching with half-hearted interest, the progress of this or that individual of renown in our own chosen field of endeavor. His results will do us no good if we cannot analyze and compare our results on an equal basis with his. No progress can be made as long as it is necessary for such eminent men as composed the fracture committees of the British and of the American Surgical Associations to characterize the results in such cases as they were able to collect, as "good, moderate, or bad." The difficulty lay in the fact that fracture records as usually, (or rather unusually), kept, presented no other basis for classification than just that. The trouble was not with the analysis but rather with the individual members of the profession from whose records they made their analysis. Think of it! a schoolboy's classification in the citadel of the art and science of fracture surgery!

Neither can Utopia be approached by the futile efforts of self-satisfied fracture specialists to foist their own methods of treatment on the profession without permitting an adequate analysis of their results, which they characterize as "perfect," so that they may be compared with the results of others.

Enough has been said to show that real progress along these lines can only be accomplished when every member of a large group of surgeons interested in fracture treatment, will adopt a standard method of recording the *necessary* data, such that a comparable analysis of an immense number of fracture cases may be made. From such an analysis a standard functional result and a standard period of disability may be determined for every type of fracture.

The industrial surgeon as a class is interested in the treatment of fractures. They belong to a group of surgeons who believe that special training, practice, and equipment, are necessary to the proper care of fractures. They see more fractures than any other body of surgeons. They encounter fractures more frequently than any other injury of equal importance. If each individual comprising this group of industrial surgeons would conscientiously and accurately record in a uniform manner the data derived from each case coming under his care for one or more years, and at the end of that time analyze all the records collectively, what a contribution they could make to the treatment of fractures!

What are the essentials or the necessary data which must be recorded in each case so that such a comparative analysis as suggested may be made?

Huntington[4] has said, "With few exceptions surgeons have neglected to perfect their records on the following essential points, viz.: exact description of the initial lesion, period of hospital residence, time interval between injury and resumption of work, degree of permanent deformity and loss of function." He states further, "I am of the opinion that the real merit of various methods and policies must await final adjudication, until a very large number of fractures have been observed for a period of from one to three years."

The Fracture Committee of the British Medical Association[3] makes the following statement, "Conclusions as to the efficacy of treatment can be deduced only from: (1) The diagram or report of the anatomical and functional results obtained; (2) The duration of the absence from work."

The Fracture Committee of the American Surgical Association[2] stated the proposition only in general terms, thus: "The first step in the betterment of practice is the study of the results achieved by present day methods. An adequate study is impossible without adequate records." This committee urged the adoption of the recording system devised by them upon large corporations having their own hospitals or relief organizations, upon members of their own and the American Medical Association, and upon all accident insurance companies and hospitals.

Hitzrot[5] has published a scheme of recording fracture treatment, which has been used by him for approximately eight years.

The recording schemes devised by the British and American committees and by Hitzrot, are presented in complete form as an appendix to this treatise.

The only classification of fractures which these committees were able to make from the data contained in their reports as previously mentioned, was that the results were either good, moderate, or bad, from both anatomical and functional standpoints. Furthermore their recording schemes have met with little or no general acceptance. These facts lead one to conclude, first, that the data *essential* to an accurate comparison of results was not included in their records, and secondly, that so much non-essential data was asked for that few could take the time or trouble to record it.

The prime considerations, therefore, to be recognized in devising a method of recording fracture data are that the scheme contain all the essentials which must be known in order to satisfactorily compare the results of treatment, and that the form be simple, easily kept and devoid of non-essentials.

With these considerations in view the following may be deduced as fulfilling the essential requirements and being devoid of non-essentials:

1. A concise description of the initial lesion, for on this depends the later classification of the fracture for analysis.

2. The exact *method* of treatment leaving out all non-essential details, but being careful to supply in particular the time relations of the primary and adjuvant treatment. From this the type of treatment may be accurately classified.

3. The precise duration of disability, from the time of the injury to the resumption of the patient's usual duties.

4. An accurate calculation of the functional ability regained as compared with the opposite normal limb, on the day previous to the termination of disability.

The first and second essentials make it possible to classify the fracture and its treatment. The last two essentials are the criteria on which the efficacy of the treatment for the type of fracture is to be analyzed.

The use of the following form of report is suggested, and fulfills these requirements:

American Association of Industrial Physicians and Surgeons

FORM OF REPORT

For Recording Fracture Treatment and Results

Case No.........................

Reported by Dr...
Address ....
Date of Report...

Patient's name...

Age..................... Sex..................... Occupation.......................................

SECTION I. DURATION OF DISABILITY

Date of injury..

Date of return to usual duties...

Duration of disability...Days

SECTION II. DIAGNOSIS

Bone or bones involved..

Exact description of the initial lesion...

....

Concise diagnosis...

....Diagnosis made from X-Ray or direct examination? (Underline)

SECTION III. TREATMENT

1. Primary (reduction and retention). Date..

Method..

....

2. Adjuvant

Dates:	Treatment:
....	....
....	....

SECTION IV. END RESULT

(Examination to be made day previous to termination of disability)

1. Functional ability of the......................................joint, proximal to the site of fracture.

(Express in percentage of normal as compared to opposite side)

Motion	Percentage of Normal
(a) Flexion	....
(b) Extension	....
(c) Adduction	....
(d) Abduction	....
(e) Pronation	....
(f) Supination	....
(g) Inward Rotation	....
(h) Outward Rotation	....
Average of all motions	....

2. Functional ability of the ....joint, distal to the site of fracture (express as before):

Motion	Percentage of Normal
(a) Flexion	....
(b) Extension	....
(c) Adduction	....
(d) Abduction	....
(e) Pronation	....
(f) Supination	....
(g) Inward Rotation	....
(h) Outward Rotation	....
Average of all motions	....

3. Muscle Power:

(a) For weight lifting..................% as compared to the normal

(b) For weight bearing................% as compared to the normal

SECTION V. REMARKS

(Note here remote complications or sequelae)

....

....

The portion of the above form of report previous to Section I is inserted merely for convenience of reference. The case number is to be filled in by the committee which analyzes the reports. The first section is brief but covers an all essential point, the determination of the period of incapacitation. The second section needs little explanation. The name of the bone or bones involved, a brief but exact description of the initial lesion and the best concise diagnosis that can be made, (either from X-ray plates, fluoroscopy, or direct examination), are all that is essential to the later classification of the fracture. Under the third section, primary treatment includes the method of reduction and the means used for retention, whether operative or non-operative, and the date thereof. Adjuvant treatment includes the dates on which any alterations in the primary fixation apparatus were made, and the dates on which baking, massage, active and passive motion, etc., were begun.

The end result, section four, calls for more detailed explanation. The date on which the determination is to be made has been arbitrarily selected as the last day previous to the termination of disability, that being the last day on which the patient is easily available for examination and also the day on which any but the remote effects of treatment will be fully apparent. An effort has been made to reduce the expression of the end result to more mathematical terms than is represented by such expressions as "perfect, slightly impaired, good, moderate, or poor function." The range of motion at the joints proximal and distal to the site of fracture has been selected as being one criterion of function which most readily lends itself to mathematical calculation. Muscle power for weight lifting and weight bearing, while not as accurately expressed can be fairly easily estimated, and has been chosen as the second criterion of functional ability.

These criteria most accurately express in exact terms the degree of function recovered after fracture. All other functional and anatomical impairments, while not lending themselves to precise estimation, have their proportionate influence in determining the mathematical value of the criteria selected. Hence, although other functional and anatomical impairments be disregarded, a comparative analysis of all treatment may be based on the mathematical expression of the two criteria which have been somewhat arbitrarily selected. For example, the nature of the union may be disregarded for it finds expression in the range of joint motion and in weight bearing or lifting power. Deformity limits joint motion in one or more planes and hence is a factor in the first criterion. Pathological changes in the joints, swelling of the soft parts and pain, all affect joint motion and the functional disability due to these is apparent in the decreased range of motion. Motor nerve phenomena, changes in the circulation, muscle atrophy, shortening and pain, all alter the efficiency of the muscles for weight bearing or lifting. Briefly and axiomatically expressed, the better the anatomical result, the better the functional result. But, the converse is also true; hence the index of the anatomical result *is* the functional result. Functional results must be the basis of judgment, and anatomical results are of interest only in so far as they affect function. Since all of the above mentioned factors affect joint motion or muscle power, and none of them are as easily or exactly expressed mathematically, the selection of these two criteria of function is justified.

In order to facilitate the tabulation and comparison of all reports, and to express fracture types and treatment in more uniform terminology, it would be advisable for the analyst to adopt a concise summary form of the more detailed report. Records from many individuals, even on identical forms, are bound to vary much in expression. Such variations can usually be reduced to uniform terminology if the original report is not too detailed or involved. Hence, the following form is suggested:

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

FORM OF ANALYSIS OF FRACTURE REPORTS

Case No..............................

Patient's age.. Sex.......................................

1. CLASSIFICATION OF FRACTURE:

   Bone or bones involved...

   By type ....

   By number or letter..

2. CLASSIFICATION OF TREATMENT:

   A. Primary:

      1. Operative:

         By type ....

         By number or letter...

      2. Non-operative:

         By type ....

         By number or letter...

   B. Adjuvant:

      By type ....

      By number or letter...

3. THE END RESULT:

   A. Per cent functional ability of joint proximal to fracture . . . .%

   B. Per cent functional ability of joint distal fracture . . . .%

   C. Muscle efficiency . . . .%

4. DISABILITY:

   Duration of disability in days. . . . .

This form of analysis contains only the bare essentials needed to make a comparative tabular analysis of the efficacy of the various types of treatment for each type of fracture. When a sufficient number of cases have been collected to make analysis valuable, it would be desirable to indicate the various types of fractures and treatment by numbers or letters for the sake of brevity and convenience in tabulation, hence space has been provided for such classification.

Fractures when measured in broad terms of economic importance constitute the most serious consideration with which the industrial surgeon has to deal. The period of disabiltiy following fracture is great and is often prolonged far beyond the time necessary for repair.

Fracture treatment is chaotic and has made little progress in the last decade. This has been largely due to the fact that no satisfactory comparative analysis of fracture treatment has yet been made.

Group progress in fracture treatment can be made when a large group of surgeons interested in that branch of surgery adopt adequate means of carefully analyzing the efficacy of the many forms and methods of treatment now in use.

Attempts to improve fracture treatment by collective investigation have hitherto been nullified because the necessary data were not carefully recorded, and the non-essential omitted.

The essentials of a satisfactory method of recording and collecting fracture data for comparative analysis are: A concise diagnosis of the initial lesion, the exact method of primary and adjuvant treatment, the precise duration of disability, and an accurate mathematical calculation of the degree of function regained after treatment.

We have outlined a method which complies with these essentials.

Industrial surgeons as a body should adopt a scheme such as has been outlined and should record and analyze their fractures for a period of one or more years.

Not until such a comparative adjudication of fracture treatment has been made will there by real progress in this important field of surgery.

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APPENDICES

A collection of all schemes of recording fracture data which have hitherto been published.
This collection is believed to be complete.

APPENDIX A

Scheme of recording fracture data devised and adopted by the Fracture Committee of the British Medical Association.

ENQUIRY FORM

Case No.......................

(This number will be filled in by the committee.)

General result defined as:

Anatomical
Good Moderate Bad
Functional

British Medical Association
(Private and confidential)

Bone (1)
Treatment (2)
Hospital at which treated (if any)
Visit: Date 191
Initials of committee's investigator

Note: For meaning of numbers (1), (2), etc., see instructions to investigator printed on separate sheet.

(Please write distinctly)

Patient's name
Address
Age years. Sex Occupation
Accident: Date 191 . Nature of force (3)

Fracture: Site
Form (4)
Associated Inquiries (5)
Treatment (6) weeks.
Duration of stay in hospital weeks.
Duration of absence from work weeks.
Special circumstances influencing treatment and results (7)
Skiagram: (8)—Before treatment
After treatment

Results:

A. Present condition of limb:
- (a) Nature of union
- (b) Deformity
- (c) Movements of joints
- (d) Mechanical or pathological changes in joints
- (e) Swelling of soft parts
- (f) Circulation
- (g) Pain
- (h) Changes in muscles:—Wasting
  Power
- (i) Nerve Phenomena

B. Present wage earning capacity compared with former

C. If fatal, cause and date of death

Notes upon headings in enquiry form.

(1) (Bone) Simultaneous fractures of different bones occurring in the same patient are to be reported on separate forms, except in the case of double fractures commonly associated, viz.: those of tibia and fibula, or of the radius and ulna. State which side.

(2) (Treatment) Non-operative, operative, or whether operation was undertaken after failure of non-operative treatment.

(3) (Nature of force) Direct or indirect.

(4) (Form) Single or multiple; comminuted or linear; transverse; oblique, spiral, T-shaped; free or impacted.

(5) (Associated injuries)
- (a) Remote: any important lesion elsewhere, affecting treatment.
- (b) Local: extensive bruising, injury to vessels, nerves, or muscles, effusion into joints.

(6) (Treatment) Nature and duration in weeks of each form of treatment used, should be stated.

(7) (Special circumstances influencing treatment and results) Favorable or unfavorable temperament or physique; preexisting to intercurrent disease. State reasons for choice of treatment.

(8) (Skiagram) Before treatment, after treatment. State whether the diagnosis, treatment and estimate of result have been controlled by X-rays.

APPENDIX B

Scheme of recording fracture data devised and adopted by the fracture committee of the American Surgical Association.

ENQUIRY FORM FOR FRACTURES

General Results:

	Good	Moderate	Bad
Anatomical			
Functional			

1. Bone
2. Site Neck Upper Middle Lower Condyle
   Involving joint
3. Name
4. Sex Male Female
5. Age
6. Occupation
7. Time fracture occurred. Date Hour
8. Hospital entered Date Hour
9. First treatment Date Hour
10. Cause of fracture
11. Kind of fracture: Oblique Transverse Spiral Impacted
    Comminuted Simple Compound
12. Was there serious injury to soft parts. Skin, yes no; Muscles, yes no; Nerves, yes no; Vessels, yes no.
13. Reduction: How many hours elapsed after accident before reduction?
14. Was anatomical reposition of fragments obtained. Yes no.
15. Anesthetic used. Yes no; Ether Gas.
16. Fixation: Closed method
    Position Hyperflexion full supination abduction
    Splints
    Plaster of paris
    Traction Buck's Jones Hodgen Bardenheuer Steinmann
    Amount of weight used

17. Open method
Was non-operative treatment tried first?
How long after injury was operation performed?
Was open reduction alone performed?
What form of internal fixation used. Steel plates. Wire
Nails Screws Bone transplants
Was it later necessary to remove fixation materials?
18. Shortening at first examination
When all apparatus was removed Date
When discharged from hospital Date
At last observation Date
19. X-ray? Yes no. First finding on the day before: On the day after reduction. Fragments displaced—slightly markedly. Fair apposition. Yes no. Anatomical Yes No. Over-riding Yes no. Rotation yes no. At last finding, on the day. Anatomical yes no. Over-riding c.m. Apposition fair yes no.
20. How long confined to bed? How long in hospital?
21. How long did patient use crutches? Cane
22. Results Final examination made weeks months after injury.
Union Bony fibrous non-union.
23. Disability Partial complete Estimated by Deformity shortening, angulation, swelling of soft parts pain nerve involvment interference with joint function endurance
24. Mortality Age of patient Main cause of death
25. Duration of absence from work weeks months
26. Is patient fully able to take his former job?
27. Present wage earning capacity compared with former
28. Compensation under insurance legislative act
Expected yes no

APPENDIX C

Scheme of recording fracture data devised and adopted by Dr. J. M. Hitzrot, of New York City.

SCHEME FOR RECORDING FRACTURES

Name Age Occupation
Date and time of injury
How injury occurred
Location of fracture
Type of fracture simple compound

- Deformity
  - In long axis shortening
  - Transverse axis Lateral displacement
  - Other displacements
- Character of line of fracture
  - from examination
  - from X-ray plates
  - other examination, such as operation
- Treatment
  - Time instituted (how long after injury)
  - Method of reduction
    - manipulation
    - traction (character and type of)
- Method of fixation (type of)
- Anesthesia used (type of) not used
- If operation is resorted to (type of)
  - causes of failure of other treatment
  - time of operation as related to time of injury
  - type of fixation used direct indirect
  - observations at operation
- Complications and sequelae of injury of treatment
- After treatment
  - Massage time begun
  - Passive motion “ “
  - Active motion “ “
  - Baking “ “
  - Other details “ “
- Time of repair, i. e., time of removal of fixation
- Result
  - Anatomical, noting callus, amount of displacement, etc., Deformity, shortening, angulation, etc.
  - Functional
    - Specify range of all movements in neighboring joints as compared to opposite
  - Industrial
- Compared to opposite side
  - Muscle power
  - Atrophy measured
  - Complications
- X-Ray examination
  - Before reduction
  - After reduction immediate when fixation is removed
  - Late pictures.

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INDEXED

AMERICAN ASSOCIATION

OF

Industrial Physicians and Surgeons

FOURTH ANNUAL MEETING

ATLANTIC CITY, N. J.

June 9th, 1919

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June 9-1919

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OFFICERS AND DIRECTORS

Officers 1919-1920

President
Harry E. Mock, M. D., Chicago

First Vice-President
Thomas R. Crowder, M. D.
Chicago

Second Vice-President
Otto P. Geier
Cincinnati

Secretary-Treasurer
Francis D. Patterson, M. D.
Philadelphia

Asst. Secretary-Treasurer
Miss Pauline Gunther
Chicago

Directors

1918-20	1919-21
A. W. Colcord, M. D. Clairton, Pa.	W. Irving Clark, Jr., M. D. Worcester, Mass.
Judson C. Fisher, M. D. New York City	C. E. Ford, M. D. New York City
E. H. Hanna, M. D. Detroit, Mich.	Sidney M. McCurdy, M. D. Youngstown, O.
H. P. Hourigan, M. D. Buffalo, N. Y.	C. D. Selby, M. D. Toledo, O.
Don B. Lowe, M. D. Akron, O.	Loyal A. Shoudy, M. D. Bethlehem, Pa.
J. W. Schereschewsky, M. D. Washington, D. C.	E. O. Voyer, M. D. Minneapolis, Minn.

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CONSTITUTION AND BY-LAWS OF THE AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

Article I. Name

The name and title of this organization shall be, The American Association of Industrial Physicians and Surgeons.

Article II. Object

The object of this Association shall be to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employees; and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

Article III. Membership

Section 1. Membership in this Association shall be of three classes: (a) active, (b) associate, (c) honorary. Only physicians who are actively engaged in the practice of industrial medicine and surgery, or who are engaged in the investigation of industrial medical problems, shall be eligible to active membership; other physicians shall be eligible to associate membership. Any person who has contributed distinguished service to the objects for which the Association stands shall be eligible to honorary membership. Proposals for honorary membership shall be handed to the Secretary-Treasurer in writing, and must be recommended to the Association by the Board of Directors before they can be elected.

Section 2. Associate and honorary members shall have all the privileges of active members except the privilege of holding office and of voting for officers and directors and for amendments to the constitution and by-laws.

Section 3. Applications for active or associate membership must be made in writing to the Secretary, and must be approved by two active members in good standing before election can take place; a two-thirds vote of all the members present at any executive session of the Association shall be required to elect to membership. Applications shall not be acted upon by the Association unless they have first been approved by a membership committee of three to be selected by the Board of Directors. Honorary members may be proposed to the Association by the Board of Directors; a two-thirds vote shall be required to elect.

Section 4. The annual dues of active and associate members shall be two dollars per year, and shall be payable in advance on the first day of May of each year. Honorary members shall pay no dues.

Section 5. Any member whose dues are unpaid is not in good standing, and he shall have no vote until his indebtedness is discharged. When the dues of any member become two years in arrears, his membership shall automatically cease.

Section 6. Members may be expelled for cause; provided, that a copy of the charges made against him shall be furnished to him in writing at least one week prior to the meeting at which such action is taken. A majority vote shall rule.

ARTICLE IV. OFFICERS

Section 1. The officers of this Association shall be a President, a First Vice-President, a Second Vice-President, and a Secretary-Treasurer. They shall be elected by the Association and shall serve from the close of the annual meeting at which they are elected until the close of the next annual meeting, and until their successors are elected and installed.

Section 2. The President shall preside at all meetings of the Association and of the Board of Directors and shall perform such other duties as may be directed by the Board of Directors. In the absence of the President the Vice-President shall act in his place.

Section 3. The Secretary-Treasurer shall keep an accurate record of the transactions of all meetings of the Association and of the Board of Directors; shall carry on the correspondence of the Association; shall keep an accurate list of the members; shall receive all moneys belonging to the Association, giving his receipt therefor, and shall pay all just bills against the Association, subject to the approval of the Board of Directors; he shall submit his accounts for audit at the annual meeting, and shall transmit to his successor in office all the funds and properties of the Association remaining in his possession. He shall submit an annual report to the Association in such form as may be determined by the Board of Directors.

ARTICLE V. ADMINISTRATION

Section 1. The affairs of the Association shall be administered by a Board of Directors consisting of the officers and twelve additional directors. The Association at its meeting in Detroit in 1916 shall elect six directors to serve one year, and six to serve two years, and thereafter six directors shall be elected each year to serve for a term of two years. Their term of service shall begin at the end of the annual meeting at which they are elected.

Section 2. The planning of the work of the Association, arrangements for meetings and programs, and for other matters pertaining to the administration of its affairs, shall be vested in the Board of Directors, except as otherwise herein expressly provided. The President of the Association shall serve as Chairman of the Board. The Board shall make its own rules and shall appoint such committees for carrying out the work as it shall deem necessary and advisable.

Section 3. The Board of Directors shall have power to fill vacancies among the officers and directors to serve until the next annual meeting of the Association, or until their successors are chosen and installed.

Five directors shall constitute a quorum.

Section 4. All resolutions shall be referred to the appropriate committees for recommendation before reference to the general body.

ARTICLE VI. MEETINGS

Section 1. The annual meeting of the Association shall be held at the place of and during the week of the meeting of the American Medical Association, but the sessions shall be held at such hours as not to conflict with the sessions of the American Medical Association.

Twenty members shall constitute a quorum.

Section 2. Other meetings may be called by the Board of Directors.

Section 3. Notice of all meetings shall be sent to the members by the Secretary at least thirty days in advance of the date set for them.

Section 4. Each member of the Board of Directors shall be notified in writing by the Secretary-Treasurer at least two weeks in advance, as to time, place and purpose of meeting of the Board of Directors.

ARTICLE VII. ELECTION OF OFFICERS

Section 1. Nominations for officers and directors shall be made by a Nominating Committee of three active members to be appointed by the President at the first executive session of any annual meeting. Provided, this article shall not be construed to deprive any member of his right to make nominations.

Section 2. Election of officers shall take place at the last executive session of the annual meeting.

Section 3. In the event of there being competitive nominations for any office, election shall be by ballot, and a majority of all votes cast shall be required to elect. If after two ballots there shall be no election, all but the two candidates receiving the highest number of votes shall be dropped from the ballot and the voting confined to the two so designated.

ARTICLE VIII. LOCAL COUNCILS

The Secretary-Treasurer shall have the power to take the necessary steps for the establishment of local or district branches of this Association.

ARTICLE IX. AMENDMENTS

This constitution and by-laws may be amended by a two-thirds vote of the members present and voting at any annual meeting of the Association; provided, that the call for such meeting shall have specified the particular amendment which is to be acted upon, and provided also that no amendment shall be acted upon which has not been so specified.

MINUTES OF THE FOURTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

Industrial Physicians and Surgeons

ATLANTIC CITY, N. J., JUNE 9, 1919

MORNING SESSION

The meeting was called to order at 10 A. M. by the President, Lieut. Col. Harry E. Mock, M. C., of Washington, D. C.

ADDRESS OF THE PRESIDENT

NEW DEVELOPMENTS IN INDUSTRIAL MEDICINE AND THE FUTURE OF OUR ASSOCIATION

COL. HARRY E. MOCK, M.C., U. S. A.

This is the fourth annual meeting of the American Association of Industrial Physicians and Surgeons. When it sprang into existence in 1916, at Detroit, it was recognized by its founders and its friends as a very husky youngster with high ideals and with a definite service to render to mankind. Even its most hopeful sponsors felt that several years must elapse before these ideals could possibly become an integral part of the national health program.

But in four short years Industrial Medicine has emerged as one of the foremost specialties in our profession. The newer conception of the supervision of the health of employees, the medical examination of applicants and of the old force, the prevention of disease and accidents by industrial hygiene and safety first, better medical and surgical treatment for the sick and injured, compensation and benefits and the relation of this human maintenance work to other employees' service departments is a development of the past ten years. In 1916 only a few concerns had adopted this comprehensive system of health service, but since then hundreds of industries have installed a portion or all of the standards represented by the terms Industrial Medicine and Surgery.

With the entrance of our nation into the World War, and the year and a half of struggle necessary to meet the overwhelming emergency, great social and economic advances were made which otherwise would have required decades to accomplish. Industrial Medicine, already established, but little known outside its own ranks, was soon recognized as a force for preparedness. Its principles stood for industrial efficiency and maximum production—both so essential to a victorious ending of the war. Every industrial surgeon should feel justly proud of the part which his specialty played in maintaining the strength and efficiency of the great industrial army without whose support the military army would have been powerless.

The work of you who were forced to remain on the job in order to maintain the health of the working forces in the essential industries; of you who contributed to the education of the public by your writings and addresses; and of you who carried the principles of this service into your work in the Army, the Navy, the other Governmental health agencies, and into the Red Cross—all of you have been responsible in giving Industrial Medicine the national recognition which it has finally attained.

The history of its part in the national preparedness program is a history of the new developments in Industrial Medicine. And today our Association stands upon the threshold of a great future, providing we continue to serve unselfishly the great masses; those who must produce and provide.

Prior to 1917 the outstanding milestones in Industrial Medicine were:

(a) The installation of qualified medical staffs in several of the largest representative industries in the country.

(b) The establishing of visiting nurses services.

(c) The introduction of medical examination of employees,—naturally followed by the thorough examination of applicants for work.

(d) The creation of employees service departments, also known as sociological or welfare departments, of which Industrial Medicine was a closely correlated service.

(e) The organization of the National Safety Council with its health betterment section and the recognition of the Industrial Surgeon's part in accident prevention.

(f) The organization of Mutual Benefit Associations and later the enactment of employees compensation laws in 38 states of the

Union. In both of these advances, Industrial Medicine had a very definite influence.

(g) The enactment of laws, still very inadequate, for the discovery of, and in some cases the prevention of, occupational diseases.

(h) The creation of medical consultants for a few state departments of Industry and Labor. The most notable example is furnished by the states of Ohio, California and Pennsylvania. The quarterly conference of Industrial Surgeons in the latter state are famous, and have been responsible for great advances.

(i) The symposiums on Industrial Medicine in the American Medical Association (first held in 1915) and many state medical associations, and finally the creation of a section on Industrial Hygiene in the American Public Health Association.

(j) The organization of the Conference Board of Physicians in Industrial Practice, and the contributions of this group to the general subject.

(k) The organization of the American Association of Industrial Physicians and Surgeons and the influence of this Asociation in elevating the standards of health service in industry.

(l) The establishment of occupational disease clinics in a few medical schools, and in at least two schools comprehensive courses on Industrial Medicine and Surgery.

(m) Contributions of Industrial Surgeons to the study and prevention of tuberculosis, of cancer, of venereal diseases, of infections and the study of health insurance and other great social and economic problems related to industry.

In 1917 when this nation sprang to arms, the American Association of Industrial Physicians and Surgeons sent a resolution to the president setting forth the importance of supervising the health of the Industrial Army and offering the services of its members to the great cause. Letters and addresses from many sources were sent to various government agencies emphasizing the value of Industrial Medicine as a means of aiding in maximum production. As a result, in October, 1917, the Medical Section of the Council of National Defense called a conference of railway surgeons and industrial surgeons to discuss this problem. A committee known as the Industrial Surgeons Committee of the Medical Section of the Council of National Defense was the direct outgrowth of this conference.

FEDERAL ACTION

Already in the Labor Section of the Council of National Defense several committees dealing with various aspects of Industrial Hygiene had been appointed and had made extensive studies.

The reports of these committees combined with the comprehensive program of the Industrial Surgeons Committee for maintaining the health of the working forces in industry influenced several large concerns, and especially the mammoth governmental industries, to install many of the recommended standards.

Finally in July, 1918, the President issued an executive order placing the various public health measures, except those of the Army and Navy, under the control of the U. S. Public Health Service. This bureau adopted the program of the Industrial Surgeons Committee, and extended its Industrial Hygiene Section to incorporate this broader field.

The survey of the medical departments of hundreds of industries of the country by this section of the U. S. Public Health Service, the suggestions for improvement, the circulars of propaganda urging the installation of Industrial Medicine in essential industries, the efforts to have medical schools introduce courses on this subject, and the co-operation with the Department of Labor to better the relationship between employers and the employed represent one of the great advances in this specialty.

Before the war was over, the U. S. Ship Building Corporation, the Ordnance Department of the Navy, the Government Arsenals and Munition Plants, the Navy Yards, the U. S. Employees Compensation Bureau, and the Railroad Administration had adopted many of the principles of Industrial Medicine. The War Department organized a medical staff, a staff of visiting nurses, and a welfare department for the thousands of civilian workers assembled in Washington. Later, the U. S. Public Health Service took charge of many of these activities.

In the Women's Division of the Department of Labor a committee of Hazardous Occupations for Women was organized. Industrial physicians and surgeons were members of this committee, although they were representing the U. S. Army and the U. S. Health Service. As a result of the work of this committee many standards for the prevention of disease and accidents to women workers were made, and several industries were influenced to adopt these standards.

In the Army, Industrial Medicine also played its role. The plans for the physical reconstruction and retraining of disabled soldiers were based largely upon the practical work along these lines which had already been done in certain industries for their disabled employees. In addition to this, our country profited by the experiences of other nations in reclaiming their disabled fighters. Hand in hand with our efforts to rehabilitate the disabled soldiers there has been maintained a nation-wide publicity campaign ever pointing to the need of reclaiming the civilian disabled. Today it is safe to say that one of the newest developments in the field of Industrial Medicine is the awakened conscience on the part of our people to the great human wastage in industry, the need of preventing this prodigality and the necessity of reclaiming those who become handicapped through disease or accidents. Already two states, New Jersey and Rhode Island, have enacted laws providing for proper therapeutic measures for the disabled from industry, the retraining for remunerative occupations when necessary, and the proper employment of the handicapped. Six other states are considering similar laws and there is a rehabilitation bill now before Congress.

Again, in the Army the establishment of "limited service" and of "Development Battalions" was based chiefly upon one of the fundamental principles of Industrial Medicine, namely, the placement of men at occupations according to their physical qualifications. Until June, 1918, soldiers who were found by their physical examinations, at the time of reaching the camps, to have defects, or who developed defects during their training which unfitted them for full military service, were immediately discharged. A survey made in December, 1917, revealed the fact that there were tens of thousands of able-bodied soldiers, capable to go across and fight, who were on duty as clerks, typists, orderlies, fire guardsmen, and many other non-combative positions. Tens of thousands of the men who were being discharged because of defects unfitting them for full combat service were perfectly fit to be placed at these selected duties, while great numbers of the others could be developed or reclaimed for selected or even full military service. Finally this truth was driven home and limited or selected service and development battalions for the reclaiming of these defectives became one of the great man-power measures of the Army. In six weeks twelve regiments of able-bodied soldiers were freed from non-combative service, replaced by limited service men, and went overseas to fight. In this work the medical officers and personnel officers (who correspond to employment managers) worked in close unison. The men were picked for duty according to physical qualifications plus occupational qualifications. Today these personnel officers are scattered throughout the industries of the country. They have learned one of the great lessons of Industrial Medicine and are missionaries carrying the need of the application of this principle to the great industrial army.

If the war had continued, Industrial Medicine and the allied human engineering activities would have proven conclusively that these principles represent the greatest movement for conserving and developing the human resources yet inaugurated in the body politic. As it was, the war lasted sufficiently long to demonstrate the value of human maintenance in industry and to place it upon a national plane.

STATE ACTION

In several of the state governments during the past two years there has likewise been a tendency to pay greater attention to the health of the working people. One notable advancement in a few states has been the appointment of qualified surgeons as disinterested consultants to the state compensation boards. This has resulted in a demand on the part of these commissions, that employers furnish better medical and surgical care to employees. Insurance companies have been aroused to the false economy of employing cheap surgical attendance for injured workers. A fairer and more equitable settlement of claims has been noted. This has caused considerable scrutiny of the various state acts, and there is a growing feeling that many compensation acts are inadequate, that a standardization of employees' compensation laws is an urgent need if justice is to be rendered to the injured and to victims of occupational disease.

In a few states, notably Pennsylvania, Ohio, California, and Massachusetts, a closer relationship has been developed between the State Department of Health and the Department of Industry and Labor, resulting in the advancement of Industrial Medicine as a public health measure. This is causing a closer co-operation between the medical work in industries and the municipal public health departments. It is apparent that within a very short time Industrial Hygiene will be a definite function of public health.

Industrial health departments and two or three night clinics made available for those who must work, have demonstrated that many incipient diseases can be discovered early, while still curable, if facilities are afforded the working people to obtain proper diagnostic and medical care. As a result pay clinics and centers for group diagnosis and treatment are beginning to spring up in industrial centers. Men trained in Industrial Medicine and Surgery will find fruitful fields of endeavor in these pay clinics of the future. Instead of the working man being forced to consult, after working hours, some physicians unqualified by training or equipment to properly diagnose his case, these centers will permit him to secure at a reasonable cost for himself and his family the same advantages of special diagnosis and care now afforded only the rich, who pay excessive prices, or the poor who receive free treatment.

MEDICAL SCHOOLS

At least eight medical schools have embodied some branch of Industrial Medicine in their curriculi. During the past year there has been a marked advancement on the part of at least two of these schools, and very comprehensive courses are now being prepared for the fall term. Laboratories are being installed for the scientific study of occupational diseases; methods of prevention of occupational diseases and accidents, and epidemiology in industry will be taught; special courses on industrial surgery and the medicolegal aspects of accident surgery will be presented by experienced industrial surgeons; the ramifications of an industrial health department and its relationship to other employees service departments will be included in these courses. Physicians and surgeons with long experience in the industrial field are being appointed to teach this new specialty. Several large industries have agreed to open their medical departments for practical demonstrations to small groups of students.

This newest development in Industrial Medicine and Surgery bids fair to become the most momentous advance yet made. Instead of medical students being graduated with only the individualistic idea of the practice of medicine they will go forth with a vision of group medicine—the possibilities of prevention as applied to a large group—and the great economic and social aspects of our profession.

PUBLICITY

Several publications have given considerable space to articles and abstracts dealing with various subjects related to this field. The reports of the conferences of Industrial Surgeons in Pennsylvania and the bulletins of our own association have served as excellent mediums for publicity.

But within the past month another great advance has been made by the appearance of two journals devoted to this field of medicine. The Journal of Industrial Hygiene is exclusively a publication of articles dealing with Industrial Medicine and Surgery. Its scope is to be international, dealing with advances in this specialty in Europe as well as in America. Modern Medicine is the name of the other journal. It covers the entire field of medicosociology, and devotes a section of the magazine to Industrial Medicine. Both of these magazines will henceforth offer the best means of advancing the principles of our Association.

ALLIED ASSOCIATIONS

Six great national organizations have developed within the past eight years which deal with some phase of the personnel subject in industry. These are the National Safety Council, the National Association of Industrial Engineers, the Western Efficiency Society, the Employment Managers Association, the National Association of Corporation Schools, and our own Association of Industrial Physicians and Surgeons. Other organizations deal with problems in which we are greatly interested, but the community of interests should draw these six associations very closely together. Their principles aim chiefly at the problems of human maintenance in industry.

For years the National Safety Council has given great prominence to the subject of Industrial Medicine. The same is true of the National Association of Corporation Schools. It is noteworthy that the other three organizations have included papers by industrial physicians on their annual programs during the past two years.

This development has lead to the following suggestion: That because of the closely related interests of these organizations in the questions of human engineering, efficiency, proper placement, and the conservation of the health and working ability of employees arrangements should be made whereby there can be established an interchange of ideas between these groups and a closer co-ordination in their efforts. Each succeeding program of these organizations should be a constructive one covering all phases of personnel work in industry and setting forth a line of endeavor for each special group during the ensuing year. Representatives of industry, labor, and the government should be invited as guests to attend the various meetings and participate in the discussions. Such co-ordinated effort would cause great progress in human engineering.

RED CROSS

The future activities of the American Red Cross are now being discussed and the national and international programs of this most powerful organization are being prepared. It has been conclusively determined that this Great War Machine shall not disintegrate, that its service is not limited to periods of calamity, but in the future it must serve humanity by becoming a power in the field of prevention. Dr. Farrand, the new director of the American Red Cross, recognizes the wonderful opportunity for the prevention of disease and accidents furnished by the general adoption of the principles of Industrial Medicine. He is anxious to receive help and advice from this group so that the final program of the American Red Cross may include a wise policy in this direction. I suggest, therefore, that this Association appoint a committee of three members, to be known as the Red Cross Committee of the American Association of Industrial Physicians and Surgeons. The function of this committee will be to discuss with the council of the American Red Cross the scope of its plans and outline wherein the Red Cross can help in the field of Industrial Medicine, and wherein our Association can further their work.

THE NATIONAL HEALTH COUNCIL

Three weeks ago there met in New York the presidents or representatives of sixteen national health associations. These various groups represented the fields of public health, tuberculosis, child welfare, child labor, visiting nursing, prevention of cancer, prevention of accidents, and Industrial Medicine and Surgery. It was felt by all present that closer co-ordination must be developed between the great number of associations existing in this country and working in many cases for the same general results. To accomplish this it was decided that a national council consisting of a representative of each recognized national health association should be formed to work out a program of co-ordination between these groups. This movement marks one of the most forward steps in public health yet made in this country. One can see in it the forerunner of a national health administration. It is indeed gratifying for our Association to be represented in such a council.

EDUCATION

It is necessary for the members of this Association to contribute both scientific and practical articles on the subject of Industrial Medicine to a greater extent than we have in the past. While the growth of our specialty has been unusually rapid, yet its principles and standards are far from being universally adopted by all industries. There is still a preponderance of the old methods which beget human waste and human suffering. There are still many employers who, refusing to recognize the human appeal of this work, cannot see the dollar and cent returns of a comprehensive human maintenance service.

Therefore, as our experience in this work develops, and its practicability is more and móre demonstrated, write and publish the arguments that will serve to educate both industry and labor to the great value of applied Industrial Medicine. Many of our own profession need this propaganda likewise.

The time has come when our Association should give careful consideration to this question of publicity. I suggest, therefore, a publicity committee.

TEACHING

With the tendency of medical colleges to include courses on Industrial Medicine another future activity is offered to our Association. We should have a committee appointed to stimulate teaching this subject in medical colleges, to scrutinize existing courses and endeavor to make them comprehensive and to prepare an outline of the subjects which should be taught under this term, Industrial Medicine, and submit the same to all medical colleges.

LEGISLATION

At every session of Congress, and of the various state legislatures, bills are submitted which deal directly with problems related to Industrial Medicine. Some of these should have our strongest support, both as individuals and as a group, while others are pernicious and need our opposition. In order to meet this situation, I suggest that a legislative committee be appointed.

CONSTRUCTIVE PROGRAM

The fact that a few far-sighted industrial concerns throughout the country have instituted programs for conserving the health of the employees, preventing accidents, bettering working and living conditions, providing a better wage, and even, in some cases, a participation in the profits of the business, bears striking testimony to the existence of faulty labor conditions. The re-establishment of human relationship in these concerns has resulted in loyalty and contentment among their working forces, a recognition of the community of interest between the employers and the employees, and an increase in production. Some of the greatest capitalists of today testify that these betterment services for their employees pay big dividends.

The adoption of this policy by all industries will result in a conservation of the man-power of the Nation, an equalization of the privileges of democracy for all our people, and will tend to cure much of the increasing labor unrest, directly due to selfishness on the part of and disagreement between capital and labor.

It is time for our Association to adopt a constructive program wherein our energies will be directed toward real service to mankind. The day is past when such an association as ours can be content with an annual meeting devoted to the reading of papers. I trust, therefore, that the directors of this Association will be instructed by you to prepare immediately such a constructive program, and to arrange a plan whereby it can be inaugurated at once.

CONCLUSION

From the gloom and sacrifices of the recent world struggle our people have awakened to many conditions long existing in their midst, tolerated without effort at correction, except when slowly accumulating public opinion has demanded certain changes.

As a result of this awakening it is realized as never before that the nations have been very negligent in conserving their man-power, in utilizing their human forces most effectively, and in granting to all their people the equal right to live in peace and contentment and to equitably share in the fruits of their labor.

THE GREATEST ASSET OF ANY NATION IS ITS MAN-POWER

The United States today is recognized as the most powerful economic force in the world. Further, it is the model for all other countries of a true democracy. If it is to maintain these enviable positions two things are necessary:

First—It must conserve the health and energy of its 40,000,000 producers and providers.

Second—It must add to the principle "all men are born equal" this further principle—*and must have the right to remain equal.*

To accomplish this end there must be a practical application of the scientific developments in medicine, education, industrial engineering, economics, and sociology, and all other branches able to contribute to the conserving of human life and the development of human happiness.

No laws or governmental regulations will make possible these new conditions—the adoption of this new principle of equality—until the people desire and demand them. To wait for legislation to correct conditions belongs to the pre-war period.

Today the community of interest between capital and labor, the spirit of fair play and justice which is manifested by many broad-visioned business men and many thoughtful labor leaders, and the thousands of our people who have become imbued with the ideal of unselfish service as the practical expression of their patriotism—all these furnish a force for the correction of present conditions more powerful than any legislative force could ever be.

The present moment marks a crisis in the history of our nation. Either the old conditions, exemplified by selfishness in every walk of life, both governmental and private, will continue to exist, thereby perpetuating labor unrest, anarchy, and war; or the new conditions, fostered by justice and service, will now replace the old, resulting in an equalization of the rights of men, and a real guarantee of future peace.

The future of our Association will be glorious, providing we measure up to the great opportunities unfolding in this reconstruction period.

REPORT OF THE SECRETARY-TREASURER

Dr. Francis D. Patterson, Department of Labor and Industry, Pennsylvania: Your Association is making progress. We have approximately six hundred members; and it certainly is a source of gratification to your management, when they think of the small group who gathered together four years ago in Detroit, and organized this Association.

During the past year one of our members died; and it is with profound sorrow that I announce to you the death of Dr. William P. Faust, chief surgeon of the American Locomotive Company, Schenectady, N. Y. He was commissioned Captain in the Medical Reserve Corps of the Army, January 12, 1918, and assigned to Base Hospital No. 33. He was detailed for the preliminary organization of the Base Hospital at Plymouth, England, from May 24th to June 14th; and for the preliminary organization of the Base Hospital at Hartford, England, from July 2nd to July 27th. He was promoted to the rank of Major, September 7th; released from active service, at Hoboken, N. J., January 24, 1919; and died at the Memorial Hospital, Schenectady, N. Y., March 27, 1919. He was buried at Schenectady, in the Vale Cemetery. After his discharge from the army he had resumed his active work as chief surgeon of the American Locomotive Works. I ask you all to rise and pay a silent tribute to the memory of Dr. Faust.

Your Secretary, at this time, hereby gives formal notice that at the banquet tonight your action will be asked upon a change in our Constitution and By-Laws. Section 4 of our Constitution provides that the annual dues shall be two dollars; but, in view of the fact that we have outlined a course of greater activity on behalf of the Association, we are going to ask for authority to increase the dues to five dollars per annum. This is simply another example of the high cost of living.

We also give notice that at our banquet tonight we shall ask for authority to amend Article VI, Section 1, providing for the meeting place of this Association. The old By-Laws provide that the meeting shall be held at the place and time of the meeting of the American Medical Association; and we are going to ask that this be amended by the addition of the words, "or at such time and place as may be decided upon by the Board of Directors." You may wonder why we desire to change our meeting place from that of the American Medical Association. The answer is that we have no guarantee as to where that meeting will be held. They meet this year at Atlantic City. They met last year in Chicago. I understand that there is a fair chance of their meeting next year on the Pacific Coast; and the officers of your Association feel that we should not be absolutely bound by a hard and fast regulation where we shall meet. What we want is a successful meeting of our Association; and, as the larger number of our membership is from the East, we do not feel that we should be obliged to go possibly to San Francisco for our next meeting. We shall ask for a change in this By-Law at the banquet.

As I said, we can report progress. We know that there are approximately 2,200 industrial physicians and surgeons in the United States, and we are going to leave no stone unturned to try to secure every one of them as a member of this Association.

Colonel Mock: The Board of Directors met from two o'clock until late last evening, and a number of things were brought up for consideration at this meeting. As the different items are reported I think it will be well to take action on them.

REPORT OF THE BOARD OF DIRECTORS

Presented by the Secretary

Yesterday afternoon, the Board of Directors held a meeting at which a number of important matters were brought up and discussed and it is our intention at this time to bring these before you, so that we may have the privilege of knowing the point of view of the members of the organization regarding what should be our course of action.

The first thing that I am going to take up is the subject of legislation. We are having today, not only in the various States, but in Washington, different bills introduced that, more or less, affect the welfare of the industrial physician and those workers in industry committed to his care; and the first piece of legislation that I wish to call attention to is what is known as the Smith-Fess Bill, which, if it becomes a law will turn over to the Federal Board for Vocational Education the care of every industrial cripple in the United States. Your Board of Directors feel very strongly that this is a matter that should be carefully investigated; and that we should take advantage of the opportunity of having a legislative committee to investigate the past actions of the Federal Board of Vocational Education and apply "the acid test", so as to find out whether the work of the Federal Board of Vocational Education has been efficient, and whether this Association should recommend to its members—and through them, to the firms that employ them—that we should stand back of or disapprove of this piece of legislation. Your Board of Directors accordingly recommends for the consideration of this body the appointment of a Legislative Committee—to be appointed by the President of this Association—who will not only investigate the legislation now pending, but also keep a watchful eye on some of the politicians who represent us in the halls of some of the Legislatures and in Congress. It is moved that the President be authorized to appoint a Committee of three, to investigate legislation and report thereon to the members of the Association.

The motion was seconded.

Dr. Mock: It has been moved and seconded that a committee of three be appointed for this purpose. Is there any discussion on the matter? It is one that should have some discussion, it seems to me. If not, are you ready for the question? All those in favor of this motion will say "Aye"; those opposed, "No.". The motion is carried.

Dr. Patterson: The second thing that we wish to bring to the attention of the Association is the necessity for additional publicity. You have all heard the story of the man who hid his light under a bushel; and it seems to me that if this Association is to live and extend its usefulness, it is absolutely essential that we have a Committee on Publicity. This committee will not only disseminate to the medical journals and the public press proper matters of information regarding the activities of this Association and of its members, but furthermore, will try to spread throughout our membership the experiences that we are having among our various members, so that you may be kept in touch with what is being accomplished in the field of industrial medicine. I make a motion that the President be authorized to appoint a committee of three, to have charge of the dissemination of publicity.

The motion was seconded.

Dr. Loyal A. Shoudy, Bethlehem Steel Corp., Bethlehem, Pa.: I do not feel that if we appoint a committee of three for this purpose, we should get the work done. I think that we should get a paid Assistant Secretary, and might thus be able to get some of that propaganda work accomplished. If you appoint a committee of three, one in Chicago, one in Philadelphia, and one somewhere between these two cities, for instance, they will never get together; and the way the mails go now, they may never get into written communication. If you have the work conducted in the office of the President or the Secretary, with a properly paid Assistant Secretary to take charge of it, I think that the propaganda work and other things will be attended to.

Dr. Patterson: Is that an amendment to the motion, Dr. Shoudy?

Dr. Shoudy: No, I just suggest it. I do not know the condition of the finances.

Dr. Patterson: We are going to raise the dues. You did not hear that.

Dr. Mock: I think that will go through. You will see the need of it. I think that Dr. Patterson's suggestion is excellent. Even if the Secretary did it, he should have three or five men to work along the line as advisers to him in getting out the publicity.

Dr. H. P. Hourigan, The Larkin Co., Buffalo, N. Y.: Could not the committee be empowered to get assistance?

Dr. Mock: That would be one of its first functions.

Dr. Mock: All in favor will say "Aye"; contrary "No". It is carried.

Dr. Patterson: The third item that occurred at the meeting of the Board was the formation of State Chapters of this Association. You are well aware of the progress made by the National Safety Council in the formation of Local Councils of the national body; and your Board of Directors feels strongly that the future progress of this Association can best be made sure by the formation of State Chapters, which are branches of the parent organization. It is the sense of your Board of Directors that the formation of State Chapters be furthered; that applications for charters be granted only upon petition of twenty members of the American Association of Industrial Physicians and Surgeons; that, in so far as possible, chapters be closely linked up with the properly constituted authorities of that State; and that the application to form chapters be approved by the Board of Directors before being placed before the Association for action.

I offer that as a motion.

The motion was seconded.

Dr. Mock: This is a matter that is very vital to the Association. We have had demonstrated by the chapter in Pennsylvania, which is the first to be organized, the great value that a chapter can be in spreading propaganda and actually putting over results in the State.

Dr. S. Dana Hubbard, New York: Would it not be wise to have a zone, rather than a State, as the unit? In certain sections of the country, you would have a very limited membership, but by territorial assignment, for instance in zones, there would be a better reaction in my opinion than if it were by States.

Dr. Mock: The zone idea has been considered; but it was felt that if State Chapters were formed in co-operation with the Industrial Board of the States and the State Societies, it would stimulate growth more than by having two or three States included in one Chapter.

Dr. Hubbard: In New York City particularly, the organization of the Division of Industrial Hygiene has been beset with danger and difficulties at every step.

Dr. Mock: Are you ready for the question? All in favor will say "Aye"; those opposed, "No". It is carried.

Dr. Patterson: The next order of business is the election of Honorary Members of this Society. Your Board of Directors yesterday considered a number of names, eight or ten, that were submitted to it, for election to Honorary Membership in the Association; and it is with great pleasure that I announce to you that the Board recommends to you, for your consideration, the election of two men to Honorary Membership.

The first of these is Surgeon General Rupert Blue, of the United States Public Health Service. It seems to me that it is hardly necessary for your Secretary to point out to you the magnificent work that has been done by Dr. Blue in the realm of Industrial Medicine. The Division of Industrial Medicine and Hygiene of the U. S. Public Health Service stands as a model that can be well copied by all who have knowledge of the splendid work that it has done; and your Board of Directors unanimously recommend that Surgeon General Blue be elected to Honorary Membership in this body. I so move.

The motion was seconded.

Dr. Mock: You have heard the motion. Is there any discussion? If not, all those in favor of electing General Blue as an Honorary Member of this Association will say "Aye"; contrary "No". The motion is carried.

Dr. Patterson: The second name that we wish to present is that of Dr. David L. Edsall, Professor of Medicine in Harvard University. We are sure that you all know the magnificent work done by him in Occupational Diseases, his establishment of a clinic in Occupational Diseases at the Massachusetts General Hospital, and his starting of a course in Industrial Medicine in the Harvard Medical School. He has been consulted by a number of the industries in regard to their problems, and we unanimously recommend that he be elected as an Honorary Member of this Association. I move that this be done.

The motion was seconded.

Dr. Mock: Is there any discussion? All those in favor will show it by the usual sign. Contrary minded? It is carried.

REPORT OF COMMITTEE ON PRIZE THESIS

Dr. Francis D. Patterson, Chairman

With your permission, the Chairman of the Committee to select the recipient of the annual prize to be awarded by the Association will now make his report. According to custom, a notice was sent to all Class "A" Colleges in the United States advising them that the prize of one hundred dollars given by this Association for the best thesis by an undergraduate of a medical college was open for competition; and, as the result of this notice, your Prize Committee received the following theses submitted in competition for the prize:

(1) A Study of Fifty Workers in Trinitrotoluene, William Herman and Tracey J. Putnam, Harvard Medical School, Boston, Mass.

(2) Industrial Medicine and Surgery, Mr. Henry C. Hermann, Louisville University Medical School, Louisville, Ky.

(3) Blindness Due to the Industrial Use of Methyl Alcohol, Miss Blanche Barrus, Women's Medical College, Philadelphia, Pa.

(4) Are the Industries Giving Their Workers a Square Deal, Mr. Leo Brandes, Chicago, Ill.

(5) Industrial Medicine and Surgery, Mr. Joseph Aroya, Philadelphia, Pa.

(6) Industrial Fatigue, Mr. George L. Whelan, Department of Medicine, University of Pennsylvania, Philadelphia, Pa.

(7) The Value of Routine Army Physical Examination Methods Applied to Industrial Employees, Miss M. Gertrude Slaughter, Chicago, Ill.

(8) Industrial Medicine and Surgery Organization and Methods Adopted by Industrial Physicians and Surgeons, Mr. Emil F. Hansen, Detroit College of Medicine, Detroit, Mich.

(9) War Methods in Peace Industry; How Our Army's Health Program May Be Utilized in Civil Occupations, Lieut. T. T. Crooks, Base Section No. 7, Sanitary Corps U. S. Army, A. P. O. 735, A. E. F., France.

Your Prize Committee wish to express to this Association their pleasure that, by means of this prize, such interest has been stimulated in the minds of students in the colleges, that they are working along the lines of problems in Industrial Medicine and

Surgery. It is with pleasure that your Committee, consisting of Dr. Alfred Stengel, Dr. Elizabeth B. Bricker and myself as Chairman, unanimously report that we have agreed that the prize should be given for the thesis submitted by Lieut. T. T. Crooks, entitled, "War Methods in Peace Industry; How Our Army's Heatlh Program may Be Utilized in Civil Occupation", with Honorable Mention of the thesis on "A Study of Fifty Workers in Trinitrotoluene" by the two medical students from Harvard Medical School, William Herman Putnam and Tracey J. Putnam. If this meets with your approval, the prize will be awarded to Lieut. Crooks, who is a student from Rush Medical College, Chicago.

It was moved and seconded that the Report of the Committee on Prize Thesis be accepted.

DR. MOCK: All those in favor will say "Aye"; contrary "No". It is carried.

Right here, I think it would be well to announce this fact: There are a great many new members who do not know about this prize. At the very first meeting of our Society in Detroit, Dr. Patterson had the foresight to offer to give $100 to the undergraduate student writing the best thesis on a subject connected with Industrial Medicine and Surgery. He gave this as a private gift, and it has been a great stimulus to our movement. The papers show the result. I am proud that a Rush man won the prize this year; but it shows that schools all over the country are training men in this line, and students are taking an interest in it. The Board felt yesterday that Dr. Patterson had carried this burden sufficiently long, and we unanimously carried the motion that from now on, the Association itself shall give the prize. I hope that this meets with the approval of the Convention. I think it would be appropriate for someone to make a motion thanking Dr. Patterson for his contribution of this money in the past. (Such a motion was made and seconded.)

It has been moved and seconded that the minutes show the gratitude of the Association to Dr. Patterson for the prize that he has given for the past two years; because we will assume the burden this year. All in favor say "Aye", contrary, "No". It is carried.

DR. PATTERSON: Your Board of Directors have decided that for next year, instead of simply having a prize offered for the best thesis on any subject in Industrial Medicine, we try to outline for those who wish to compete for the prize the fact that it should be written on some specific subject; and we have, therefore, decided that the prize, next year, shall be for the best thesis on any of the three following subjects:

1. How May Scientific Medicine Be Best Applied to Industry?

2. Industrial Surgery as Related to Compensation Laws and the Rehabilitation of the Disabled in Industry.

3. How Can Medicine Best Be Socialized?

The next thing that we wish to bring to your attention is the subject of the appointment of a Committee on Teaching. As President Mock stated just now, medical schools are gradually getting out of their lethargy and away from their own conservatism, and are finding out that there is such a subject as Industrial Medicine; and that if they are to keep abreast of the time, it is necessary for them to include in the curriculum a course in Industrial Medicine, so that the undergraduate student may at least learn the fundamentals of what has become a great specialty. These schools are constantly writing to your officers, asking how they shall go about the matter of giving a course in Industrial Medicine. To them, it is like the teaching of Sanscrit or some other dead language; so with the knowledge of the need for their having a standardized course, your Board asks for authority to outline such a course, this outline to be turned over to the medical schools with the recommendation that it be made a part of their curriculum. I move that your President be authorized to appoint such a Committee.

The motion was seconded.

Dr. Mock: Is there any discussion?

DISCUSSION ON TEACHING COMMITTEE

Dr. S. Dana Hubbard, New York: The New York University, in its postgraduate course for a certificate in public health, has instituted practical work in industrial establishments. Only during this past week, I had the pleasure of taking fifteen postgraduate students through several industrial establishments in the City of New York. Cornell Medical College has established a course on similar lines, and its students also have been taken through these establishments. It seems to me that with the New York University teaching it in the postgraduate method, and Cornell in the undergraduate method, there is a discrepancy. This should be a practical course for the medical student, and a combined practical and theoretical course for the postgraduate. All the men want to be so trained that when they apply for appointment to a firm or establishment, they are qualified to meet the demands of the service. I had an experience, a few days ago showing the embarrassment of an industrial surgeon; a workman had been injured and was unconscious. He was taken to the welfare room. There was no history of the accident. He was picked up in a dark passage unconscious, having been found there by a fellow workman. It turned out afterwards that this man was a drug addict and had taken an over dose on his way to work. On striking the hot air of the workroom he was overcome. Now, there is every reason that if a man is directing an establishment, this man should know something about the physical qualifications of his men. I defy anybody to make a diagnosis of narcosis in the presence of the antidotal effect of cocaine, especially in the presence of heroin. Here the resemblance to alcohol is marked. They are so similar that only time can tell which is which. The surgeon, to his embarrassment and chagrin, called up the office and wanted to know whether we had lost one of our sheep. He said, "We have a man with a dozen punctures in his skin. I am sure he has not been affected by fumes in our establishment. His pupils are dilated; he is in coma; his muscles are relaxed." I said, "I will come over." I did so, and recognized one of our chronic addicts. Looking at his card we found that he had taken heroin and cocaine for five years. The man running the office should have a card index instantly showing the addicts. Each addict should be known confidentially to the surgeon. The surgeon should be so equipped by records and by training that when a man is brought to his office unconscious, he would have the ability to at least suspect if not detect the truth. We have the same thing with chronic drunkenness. You all may have been ambulance surgeons, and have often made the mistake between opium and alcoholism. I have had the experience of having a man who had been punched through the orbit by a billiard cue. Three surgeons thought it was a case of alcoholism. All that showed was the little hole where the cue had penetrated the brain. At autopsy, the tip of the cue was found in the brain itself.

If a man is peculiarly irritable or peevish, has spells of confusion or is addicted to opium, the record should help the surgeon. Mighty few establishments carry records. It is taken for granted that if a man is hurt, he should be taken to the surgeon; and that is the end of it. The record should be made partly on the employee's time and partly on that of the employer. That will go far to help in taking care of such cases.

Dr. William J. Means, Jeffries Manufacturing Company, Columbus, Ohio. I have no objection to offer against the appointment of a committee to deal with the question of a course in Industrial Medicine in Medical Colleges. My position is, however, that the course should be a post graduate one, rather than be included in the curriculum of our Medical Colleges as it stands at the present time. Several of the leading medical colleges require now a clinical year in addition to the four years schedule for the degree of M. D., and in my judgment the Association of American Medical Colleges will require, in a very short time the same schedule of all the colleges in membership. I am satisfied that clinical medicine, as it pertains to industrial work, should be taught in a fifth clinical year, rather than in the schedule of a four-year course. Several States now require a clinical year after graduation from a Standard Medical College, before licensing the doctors to practice medicine. A course in Industrial Medicine should be taken during the fifth year of special training. I know of no college that could give a practical course in Industrial Medicine that would be of special value. It is my judgment that Industrial Medicine requires special training. It is my experience that very few physicians, immediately after graduation or even after having spent one year as intern in a hospital are fitted for the work. It requires not only a knowledge of clinical medicine, but some training in sociological work, as well. I shall support the motion that a committee be appointed to deal with this very important matter, but will strongly urge that the subject should be considered as postgraduate training rather than a part of the general course in our medical colleges.

Some years ago, when I was Dean of The College of Medicine of the Ohio State University, I undertook through the Dispensary Service certain training in welfare work, with the senior students. The District Nursing Association furnished nurses to help carry on the work. The results were not very satisfactory. While a measure of industrial service can be achieved in this way, it does not reach the higher educational requirements for industrial medicine.

Dr. A. W. Colcord, Carnegie Steel Co., Clairton, Pa.: I should not object to having that made a part of the fifth year, if that were the requirement of every medical school that gave a degree. If given only to those who went back to get a postgraduate course, I should oppose it. I have had a great deal to do with the training of assistants; and if anything impressed me, it was the dense ignorance on these subjects in the graduates of medical schools. I believe that training should be given to every man who gets a degree. Whether in the fifth year or before, is a thing to be worked out by the schools.

Dr. Seneca Egbert, University of Pennsylvania, Philadelphia: I should like to say that I feel quite sure that in bringing this matter of publicity to the medical schools, you will find yourselves up against a stone wall; because, if I know anything about it, you will find that the medical curriculum of today is over full—that is, the present four years of the undergraduate school. I am sure that you will find that it is practically impossible today to introduce any definite course on Industrial Medicine into the curriculum. I think, myself, as Dr. Means has suggested, that the place for this is in the clinical year, which is practically bound to come, and which has come in some measure in the so-called hospital year. The Pennsylvania law permits a man who does not want to make himself a practising physician, but a laboratory man, to take a postgraduate year—a so-called clinical year—in laboratory work; and there would be no objection on the part of those in authority in this State to carrying on in Industrial Medicine, instead of a hospital or a laboratory course in this year. I speak thus in warning, because I feel sure I know what you are up against.

I want to mention something that we are doing in the University of Pennsylvania. My colleague, Dr. Smith, gives four lectures to Junior students on occupational diseases. These lectures contain a good bit pertaining to Industrial Medicine. We are also carrying on, not only in our hygiene course, but also separately, a course of Industrial Hygiene and Medicine, which has gone on during this last semester. We have not only given instruction in laboratory work, but have taken these students to numerous industrial plants in and about Philadelphia—more than a dozen such places, such as the Welsbach Works, the Disston Saw Works, and other factories of all kinds, even to a blast furnace; and the last thing was to go through one of the big milk plants of Philadelphia. So our students in that course have got a rather broad experience; but as far as getting it in the undergraduate course, I think you are up against a serious proposition. I have been in the game so long that I know that no dean who has the curriculum to care for will welcome such a suggestion.

Dr. J. W. Schereschewsky, U. S. Public Health Service, Washington, D. C.: I do not feel that I can quite agree with the two gentlemen who have just spoken. As a matter of fact, all the training in the medical schools is short on the Preventive side. What we need in the revision of the curriculum is more attention to prevention of disease in general; to furnish the student with certain fundamentals on which to build later. While it might not be practicable to arrange for a full course on Industrial Medicine in undergraduate years, the need is pressing to increase the amount of instruction given students along Preventive lines, and to furnish them with a right attitude towards Prevention when in the undergraduate course, so that they would be more efficient than they are when they graduate. I think the fact that Industrial Medicine and Surgery in particular, and Industrial Hygiene in general, is almost completely ignored in medical schools is illustrated in the type of histories taken by hospital interns. In practically none, except those in institutions that one might count on the fingers, is the occupational factor in the case brought out. This is very seldom done in the histories of hospital patients. The definite lines on which these recommendations should be made may be worked out by the committee after careful consideration; but I feel that we should provide for some instruction to undergraduates along these lines.

Dr. John N. Bassin, New York: It seems that New York State's Insurance experience points to the inadequacy of intern's histories of injured workmen. Salient items relative to occupation or manner of injury are seldom if ever recorded. In justice to the State, the workingman and employer, not to mention vital statistics, one might assume that such practice is the result of poor training or negligence on the part of the hospital intern. This situation might be remedied when all medical schools will teach Industrial Medicine and Surgery as a specialty. The objection to overcrowding the curriculum is only apparent. In view of recent Industrial Reconstruction, a post graduate course of instruction in Industrial Medicine and Surgery is a matter of necessity rather than one of choice to many practitioners in Industrial centers. The undergraduate course may be elective at the beginning to encourage the more adept student with natural tendency to make this branch of Medicine a life work. Eventually all senior medical students should be given an opportunity to master the fundamental principles of this specialty on par with the others in the curriculum. I believe this Association is going to be instrumental in prescribing and encouraging such courses in all medical schools. Incidentally, in the course of this discussion, it seems that the Industrial plant as a future clinical center of hygiene and sanitation, occupational disease, and traumatic and reconstructive surgery has not been mentioned.

Dr. Otto P. Geier, Cincinnati, Ohio: I think that some of the men who have discussed the resolution have, perhaps, misinterpreted the suggestion from the Board of Directors. I assure you that it was not our intention that this Association, by appointing a committee, should become autocratic in settling the way in which this subject should be taught in the medical colleges. We merely felt that the subject was so new that many medical colleges attempting to teach it would welcome suggestions from a group of men like this, who had given thought to the problems of industry. We felt that we should be prepared to offer the deans of medical colleges who might inquire of us our opinion, suggestions as to how the subject should be introduced, both graduate and undergraduate. We felt that many might be stimulated in taking up the subject and instituting departments of Industrial Medicine and Surgery, and felt that this experience would lead others to believe also that much of the teaching of hygiene might be humanized by departments of industry. We have with us Major McCord, who is to take charge of the Department of Industrial Medicine in the University of Cincinnati. We might get his opinion as to how he would welcome suggestions like this.

Major Carey P. McCord, University of Cincinnati, Cincinnati, Ohio: In the organization of a Department of Industrial Medicine and Public Health in the University of Cincinnati, I must say that much of the stimulus has come from the industries themselves. Not only have the industries supplied stimulus but in many instances practical suggestions in the formulation of our program. I want to tell you something of this program. Many of the things contemplated are unorthodox for a Medical College. In addition to didactic and laboratory training for students in Public Health and Industrial Medicine such as is now carried out in several schools, we anticipate activities among the industries themselves in an effort to improve the industrial medicine and safety conditions for employees. This will necessitate in addition to the teaching staff a group of field workers who will be available to the industries for co-operation, investigations, educational activities among the workers, etc. This personnel for field work will include an Industrial Medicine Field Director, a Woman Field Director for work among women in industry, a Safety Expert and an Employment Relations Expert.

The student training in Industrial Medicine is going to be carried out along lines somewhat as follows:

The course will be open only to those who already have medical degrees. Essentially it is a postgraduate course, of one year's work of nine months. The first half of the year's work will be given in the medical college, and the second half in practical work in the industries themselves. For this latter half the Industrial Medicine Field Director will be in charge. During the first portion of this practical work, the students will be taken to industries presenting a diversity of potential medical and safety hazards for familiarization as to the methods for the elimination of these hazards. Later the individual students will be assigned to a particular plant for an industrial medicine internship under the continuous supervision of the field director. We hope that through this combined didactic, clinical, and practical field work training that men and women may become practical competent industrial physicians.

Particular courses are being worked out leading to the degree of Dr. P.H. Final plans are not as yet complete. Many medical schools are not alert to the needs and requirements of courses of this kind—either in Industrial Medicine or in General Public Health. I believe that a committee such as has been discussed here this morning can bring to the medical colleges much information that will be valuable to them and welcomed by them.

Dr. Frank E. Schubmehl, General Electric Co., Lynn, Mass.: Just a word in regard to the industrial medicine side. I feel that we all might have an opportunity to know all that there is to be applied in industry, if we would apply in industry such medicine as we already know. I should like to have you read, if you have not already read, an article by Dr. Robert H. Lovett, of Boston, published in the Boston Medical and Surgical Journal of April 10th and learn what he found from his experience in teaching the men taken into the army to apply the medicine they knew to the men in the service.

Now, I feel that we want the medicine that is today susceptible of being taught in medical schools simply applied in a human way to industry. Industrial hygiene is a new phase of it.

With regard to finding room in the curriculum of our present medical colleges for this sort of thing, I believe that if the faculty were all compelled to take the didactic courses given in the various medical colleges, they would conclude that there are some that they could modify in this essential.

Dr. Emery R. Hayhurst, College of Medicine, Ohio State University, Columbus, Ohio: I want to speak of my experience as a teacher in the field of Industrial Hygiene, and hygiene in general; and to point out what I think may be of value to this committee. For four or five years I have been teaching Industrial Hygiene in the University of Chicago and in Ohio State University, and I think what is necessary is something of a change of attitude, not particularly on the part of the staffs of medical colleges, but especially on that of the Council on Education of the American Medical Association. There is one stumbling block. They have a hard and fast course set for complete medical training, and the dean of a medical college cannot alter it. Also, I think teachers in other types of colleges are much more alive to this subject than are those in our own medical colleges; this is due to the fact that the latter are hide-bound in regard to subjects taught by the Council on Medical Education. At Ohio State University there is one didactic course in medicine in the Senior year. This is "preventive medicine." We take as much time in this course as possible—a few hours—for Industrial Medicine and Hygiene. That is the only opportunity that we find for it. I think that the place for getting audience for this subject is higher up than medical school faculties. I thank you.

Dr. Mock: It seems to me that this discussion has undoubtedly proved the need of a committee to consider the things brought out by the various speakers, even though it finds that there is no future field for its work. All those in favor of the motion will signify it by saying "Aye;" contrary minded, "No." The motion is carried.

I want to make Dr. Otto P. Geier of Cincinnati, chairman of this committee, and Dr. W. Irving Clark Jr., of the Norton Co., Worcester, Mass., a member of it. I will also appoint on the committee Dr. Emery R. Hayhurst of the Ohio State University, Columbus, because of his work in this direction. I think that it would be well to have Dr. Alfred Stengel of the University of Pennsylvania an ex-officio member, and I also appoint Dr. A. J. Lanza, of the U. S. Public Health Service, Pittsburgh, Pa., because of his recent work in stimulating medical schools to take this up.

My attention was just called to the fact that we have not yet appointed the Nominating Committee. I trust that nominations will be made from the floor if you do not like the report of the committee. I will appoint Dr. J. W. Schereschewsky, Dr. E. O. Voyer and Dr. Thomas E. Crowder. Will they please go out and report as soon as possible? There are six directors to be elected.

We will finish with the report of the Directors' Meeting.

Dr. Patterson: The next business before you is the question of our co-operation with the American Red Cross. As the President yesterday emphasized to the Board of Directors, the Red Cross is just now engaged in international activities; and it is the thought of the directors that a committee of five should be appointed to co-operate with them in whatever work they undertake. It is needless for your secretary to emphasize to you that it seems to us that the guiding hand of the Association should be laid, with the aid of forcible language, on the present activity of the Red Cross in teaching what they are pleased to term "First Aid." The dominant trouble today in many industries is incompetent First Aid by a collection of people who have had more or less training in the American Red Cross or elsewhere, and it seems to me and to the other members of your Board of Directors that we should have a committee to co-operate with the Red Cross, and stop any incompetent First Aid in the industries, and conserve the lives of the men under our charge. I, therefore, move you that the President be authorized to appoint a committee of three, strong in voice, firm in personality, and with some ideas that they are not afraid to tell to the Red Cross or to anyone else; and the sooner we get it, the better. I put this as a motion.

The motion was seconded.

Dr. Mock: It is moved and seconded that a committee of three, to be known as the American Industrial Physicians' and Surgeons' Commitee on Red Cross Activities, be appointed. All in favor say "Aye;" those opposed, "No." It is carried.

Dr. Patterson: In every meeting that the Association has ever had, we have had the honor of having with us those who are brim full of resolutions. One of the first things that we did was to resolve. We are strong on resolutions. I do not know how much we accomplish. I, therefore, move you that, in order that the resolutions may be properly sterilized before being presented, a committee of three be appointed on resolutions, to bring them before us at the banquet tonight.

Dr. Mock: There is no need of putting a motion, for a Resolutions Committee is provided for. I want to appoint as the committee Drs. Charles A. Lauffer, Chief Surgeon, Westinghouse Electric Company, Pittsburgh, Pa., chairman; Loyal A. Shoudy, Bethlehem Steel Company, Bethlehem, Pa., and Sidney M. McCurdy, Youngstown Sheet and Tube Company, Youngstown, Ohio.

Any of you who have resolutions that will set forth a constructive program for the coming year should hand them in, so that they can be considered by the Resolutions Committee and reported on at the banquet tonight.

Dr. Patterson: The last business that the Secretary has to bring to your attention is the requirement upon the chair for the appointment of an Auditing Committee to audit the accounts of the Assistant Secretary and Treasurer, who is the custodian of the deficit that your organization now possesses.

Dr. Mock: I will appoint that Committee without further action, because I know that that is also an act of business, and because the Assistant Secretary, who is located in Chicago, has been swamped with work in getting out the bulletin. It will require an Auditing Committee close at home; so I will appoint Dr. D. B. Lowe of the B. F. Goodrich Company, Akron, O., as chairman, and the other two members of the committee will be Drs. Wilber E. Post, Chicago, Ill., and Edward A. Oliver of Sears, Roebuck & Company, Chicago, Ill.

There are some members of the Board of Directors who want to speak of some other legislation business.

Dr. A. W. Colcord, Carnegie Steel Company, Clairton, Pa.: If I thought that there was a person here not interested in the subject of compensation for hernia, I would not bring it before you; but you are interested, and I believe that you want a chance to express yourselves as a body on how you feel about it.

Although surgeons everywhere are convinced that the vast majority of hernias are not compensable, state boards are all allowing compensation for an occupational disease masquerading in the form of an accident. I am going to offer some resolutions and give you the history of them.

In Pennsylvania we are putting up a fight. In 1917, Dr. Lauffer read a paper on this subject before our State Conference of Industrial Physicians and Surgeons. Then, in April, 1918, I read a paper before the same body along the same lines. Last March, at our Pittsburgh meeting, we had a paper on "Traumatic Hernia" by Dr. Patterson; and a committee was appointed to draw up an amendment to our Compensation Law, urging upon the Legislature relief from this burden of paying compensation for things that we do not believe to be compensable. During the past three years over 4,000 cases of hernia, in Pennsylvania alone, have been paid compensation. We all believe that less than 2 per cent of hernias are traumatic. We need not argue about it; so why speak of it, as we are convinced now. I hope that we shall put ourselves on record as being in favor of legislation to relieve the hernia situation.

Dr. Patterson: Now, Mr. Chairman, arising to second the resolutions of Dr. Colcord, I should like to say a few words on my experience with compensation boards throughout the country. Some weeks ago, I sent out a questionnaire to the various compensation boards, to find out what their practice was in alleged cases of traumatic hernia; and practically all wrote back and told me that they were compensating anywhere from 100 to 1,200 cases of traumatic hernia a year.

When I studied medicine I was taught that traumatic hernia was a medical curiosity; and I think it was, until a lot of lawyers were appointed as members of the compensation boards; and they thought that, with the gift of an appointment, usually by political preference, on a compensation board of any state, they had suddenly become endowed with more knowledge than the average doctor, who had to take years of hard study to acquire knowledge in a medical school. Therefore, with characteristic effrontery, they have taken upon themselves to hand down decisions on cases of hernia which, to my mind, have become a scandal and a disgrace. When we take and read that the compensation board of one state had before it a woman who was employed as a housemaid in a rooming house, where she was engaged in the terribly straining occupation of, with the aid of another maid, lifting over a feather mattress; that she then sustained a hernia, though she was able to work five days afterwards, at the end of which time she discovered that she had a hernia. She took her case to the Compensation Board and was awarded compensation. That is the history in a large number of these cases. When we read of Coley and other men who, with an experience of many thousands of cases of hernia, have never seen but four cases of traumatic hernia; and, on the other hand, read a list of cases in which compensation is granted for alleged traumatic hernia, I think we should follow the advice of Judge Brown of the Court of Common Pleas of Allegheny County, who, when he sustained the decision in the case of Brown vs. the Pittsburgh Coal Company, said these significant words: "If the award of compensation in these cases approaches being a matter of fraud upon the employer, it is a matter for regulation by law."

Gentlemen, I say it has become a scandal. There is hardly an employer throughout the length and breadth of this land who has not bought many an old hernia and paid a good price for it; and it seems to me that it has become a matter of fraud. The time has come when we should have legislative enactment that should state clearly what constitutes a traumatic hernia, and stop the business of leaving the decision to some lawyer whose knowledge of medicine is as profound as that of the unborn child.

DR. MOCK: As I understand it this resolution is not offered as a motion, but will be presented to the Resolutions Committee. Do I understand that this resolution states that the only hernia that will be considered traumatic and, therefore, compensable is one that shows a definite tear, ecchymosis, etc., in a case where there is no preformed sac?

DR. OTTO P. GEIER, Cincinnati: I think that we must be very careful, and not permit the Association to adopt resolutions that may damage the good work that is being done. Throughout the war, Labor has become favorable to the whole program of industrial physicians; and I should hate to see the relations that we have gained with Labor disturbed. Is it not possible that if a resolution of this sort came through the American College of Surgeons, it would be better? It would not matter so much, if they should get the onus of it, as they are not in contact with the human side of industry. Let us not be placed in a position before Labor as upholders of our employers; but let us stand for the problems of Industrial Medicine in its largest sense. I believe, after all, that hernia is only a fraction of the work that we do.

DR. GEORGE M. PRICE, Joint Board of Sanitary Control, New York City: While most of the cases that have been settled for have not been due to trauma, it is rather problematical whether this resolution should not be sent to some surgical society and not adopted by an association concerned with Industrial Medicine. I think it would look as if industrial physicians and surgeons were taking the part of the employer too much against the employees.

Dr. Judson C. Fisher, Chief Medical Examiner, Globe Indemnity Company, New York City: I think that the maker of this resolution should take into consideration the fact that in the majority of States this subject has been fought out by the best surgeons in the State putting forth that idea of traumatic hernias as being sudden and attended with prostration, tears in the perineum, etc.; and the Compensation Boards, to get around this and award compensation, have ruled that a man may have a preformed sac and a hernia existing, but if, in the course of his employment, he suddenly lifts an unusual burden and the hernia becomes larger, it is compensable.

Dr. John N. Bassin, New York: This brings out a fact recognized by physicians and surgeons practicing Industrial Medicine and Surgery. In the state of New York the laws have been so interpreted that if a workman is subject to unrecognized anomoly (structural or functional) be it Tuberculosis or other disease, even though occupational or congenital in origin, as long as the workman was not hampered by and conscious of such physical defect or malady previous to accidental injury while at work in or under the auspices of the plant—he is entitled to compensation. To let the operating surgeon decide the question of Traumatic Hernia and positively differentiate it from any other type of hernia in the course of a surgical operation is to empower the surgeon beyond his scope, for the last word on the surgical pathology of Hernia has not yet been uttered. It therefore seems imprudent to railroad this resolution and thus impugn the scientific and humanitarian principles of this Association.

Dr. Mock: There is no question before the house. This will save discussion tonight. It is a resolution that will be presented to the Committee.

Dr. William J. Means, Columbus, Ohio: I move that we refer that to the Committee on Resolutions and that it be reported on in that way.

The motion was seconded.

Dr. Mock: It has been moved and seconded that the resolution be referred to the Committee on Resolutions. Is there any discussion?

Dr. H. P. Hourigan, Buffalo: I think it appears from the discussion here that this organization is not entirely in favor of that resolution. Why not decide that now? I think it would not be for the interest of this organization to take a partisan stand. I think we should endanger the welfare of this organization. I believe that it will be well to settle the matter now and be done with it. I think that that motion should be beaten now, not reflecting on the Committee on Resolutions. I think it should be carried this way: that we decide to take no further steps in the matter of discussing the relative merits of the justice of granting compensation for hernia—or something along that line. The point that I wish to bring out is that we should decide the matter now and get through with it.

Dr. William J. Means, Columbus, Ohio: It seems to me we have confused two things in this discussion. One principal condition connected with any form of hernia, and the other traumatic hernia. We are all agreed that morbidities occur in all forms of congenital hernia, and the question of compensation for disability is one that is largely governed by the Industrial Board in each State. I think we are all agreed that traumatic hernia is a very rare condition, and when it occurs there is no question as to compensation for the disability that follows. It is unfortunate that no uniform rule for compensation of morbidity arising with hernia, exists among the states having compensation laws.

This organization can be of great service in getting more uniform rules effected. A committee can give the matter ample consideration and report conclusions at a later meeting.

Dr. Samuel P. Mengel, Lehigh Valley Coal Co., Wilkes-Barre, Pa.: Just one word in regard to the point that Dr. Geier has spoken of, in reference to the Labor side of this question. My opinion is that they are as anxious for a decision in this matter as we are. If it is a fact that hernia is not caused by trauma, then why should it be a compensable injury? Many of the employees who claim compensation for hernia know positively that the hernia existed before the alleged injury, that it will be necessary for them to perjure themselves in order to make it a compensable case. We have not considered these cases compensable, and I believe have had less cases before the Compensation Board for this reason. The employee knew that in order to get compensation, in many instances it would be necessary for him to perjure himself.

It is not a question of railroading this thing through, it is a question of justice. I think it should be decided by all Compensation Boards and I think this body should take a decided action, and outline a plan.

Dr. Colcord: It has been stated here that the only person to whose interest it would be to have this resolution passed is the employer. I cannot agree with this. When the unjust hernia tax is levied on the manufacturer, he simply adds it to the cost of production—and the consumer pays the bill.

The man most injured is the man with a hernia. When we have laws so fixed that it is to the interest of a man with an old hernia to swear that is a recent one and that it came suddenly as the result of an accident, we are putting a premium on crookedness; we are offering a reward for perjury. It is a frequent occurrence to have a man come to me and say: "Doctor, I lifted something yesterday, and I felt a lump"—when I know that it was many yesterdays ago that he got the lump. He has lied because he thought that he would be paid for lying. When we do that, we are doing a great injustice to the laborer himself; and I think that we should protect him against such things.

Dr. H. P. Hourigan, Buffalo, N. Y.: I believe that this thing should be settled right here, in full meeting, and not at a limited meeting such as we shall have tonight at the banquet. Therefore, this motion to refer the matter to the Committee on Resolutions should be beaten. I think that a full meeting is the best place to have it decided.

Dr. Mock: There are so many angles to it. If you examine a man for employment, and the records show that he has no hernia, and yet, two weeks later, he develops a hernia,—there is a big problem whether it is traumatic or acquired. Those in favor of the motion to refer the resolution to the committee will say "Aye"; contrary, "No."

Dr. Patterson: Will the "Ayes" stand up, please? Now will the "Noes" stand up?

Dr. Mock: The "Ayes" have it. The resolution is referred to the committee. That being called for, I will appoint the committees.

The Legislative Committee will be Dr. J. W. Schereschewsky, Chairman; Dr. Frank E. Schubmehl, and Dr. Chas. W. Harpster.

The Publicity Committee will consist of Dr. Loyal A. Shoudy, Chairman; Dr. T. R. Crowder, Chicago; and Dr. C. E. Ford, New York City, with the President and Secretary ex-officio members of the Committee.

The Teaching Committee I have already appointed.

The Red Cross Committee will be as follows:—Dr. Otto P. Geier, Cincinnati, Chairman (he has been very active with the Red Cross). Dr. Francis D. Patterson, of Harrisburg, because of his remarks, should be a good "governor" (is not that what you call it on an engine?) on that committee; I am going to be egotistical enough, because of my connection with the Red Cross down there at Washington, to think I might be mentioned on it; then I am going to put on it Dr. Loyal A. Shoudy and Dr. T. R. Crowder, and also Dr. A. C. Marshall, of Philadelphia.

The Resolutions Committee and the other committees have been appointed. That takes care of all the committees, I believe.

We will now have the Report of the Nominating Committee.

REPORT OF THE NOMINATING COMMITTEE

Dr. J. W. Schereschewsky, Chairman: In view of the fact that this Association is just about striking its stride, and that we believe that this forth-coming year, with the present officers of the Association, will be one of great progress, we recommend the following:

President, Dr. Harry E. Mock, Washington, D. C.; First Vice-President, Dr. Thomas R. Crowder, Chicago; Second Vice-President, Dr. Otto P. Geier, Cincinnati; Secretary-Treasurer, Dr. Francis D. Patterson, Harrisburg; and Assistant Secretary-Treasuer, Miss Pauline Gunther, Chicago.

In making this report, I would say that the Nominating Committee steam-rollered the First-Vice President, who did not wish to be continued in office; but, nevertheless, he had nothing to say about it, seeing that he was one against two.

Six Directors are to be elected, according to the Constitution. The following names are submitted:

Dr. W. Irving Clark, Jr., Worcester, Mass.; Dr. Loyal A. Shoudy, Bethlehem, Pa.; Dr. E. O. Voyer, Minneapolis, Minn.; Dr. Sidney A. McCurdy, Youngstown, Ohio; Dr. C. E. Ford, New York City; and Dr. C. D. Selby, Toledo, Ohio.

Your Nominating Committee respectfully submit this report.

The report was signed by Drs. Scherschewsky, Voyer and Crowder.

Dr. Mock: Every officer is in an embarrassing position. I cannot call on anyone to cast the ballot.

Dr. Schereschewsky: I move that the Secretary be authorized to cast one vote for the election of these gentlemen.

The motion was seconded.

Chairman of the Nominating Committee: It has been moved that the Secretary of the Association be authorized to cast one ballot for the nominations submitted by the Nominating Committee. The motion has been seconded. Is there any discussion?

Dr. Hayhurst: You did not call for nominations from the floor, which is necessary.

Dr. Schereschewsky: The Chair will call for nominations from the floor.

It was moved and seconded that the nominations be closed.

Dr. Schereschewsky: All in favor of this will signify it in the usual way. Those opposed? The nominations are closed. The motion is now in order that the Secretary be authorized to cast one ballot for the Association, for the election of these officers. It has been moved and seconded that he be so authorized. Is there any discussion? All in favor will signify it in the usual way. Those opposed? It is carried.

(Adjourned at 12:30 M.)

AFTERNOON SESSION

The meeting was called to order at 2:30 P. M. by the President, Dr. Mock.

Dr. Mock: The meeting will come to order.

When this Association was organized, in 1916, we adopted this plan of giving the morning to a business meeting; the afternnon, to a program; and the evening, to a banquet. From the discussion this morning, and the anxiety to go into such subjects as Hernia more thoroughly, I believe that the time is approaching when the convention should extend over three or four days, instead of one. We could use this amount of time. Your committee endeavored to cover some of the most important phases of Industrial Medicine, namely: Industrial Medicine itself, Industrial Surgery and Industrial Hygiene, and the relation of these two other branches of the employees service department.

The first paper on the program will be given by a man who is connected with Rush Medical College, of Chicago, the Dermatological Department, and who has also devoted part of his time for seven years, to Industrial Medicine. I can testify, because we have been associated together, that the help of a specialist on skin diseases is one of the best helps a man can have in industry. We will now hear from Captain E. A. Oliver, M. C., U. S. A., formerly physician to Sears, Roebuck & Co.

SYPHILIS, AN INESTIMABLE FACTOR IN INDUSTRIAL INEFFICIENCY

Edward A. Oliver, M.D.

Instructor in Skin and Venereal Diseases, Rush Medical College;
Captain, Medical Corps, U. S. A.

That syphilis is a moral corrosive has been commonly understood; that it has been a menace to personal and public health is a matter of common knowledge; but that it could be regarded as a prolific source of industrial inefficiency has just dawned upon the profession. Too little attention has been given in the past to this disease by the industrial physician and the profession as a whole. Surely it is high time that active measures be taken against an enemy that fills our insane asylums, causes thousands of stillbirths, stands as a large factor in all of the killing diseases, and causes a sufficient decrease in the efficiency of the working world to rank it as one of the most important economic problems in industry.

There are several possible reasons for our past inaction. First, syphilis has always been associated with immoral sexual relations, and little attention has been given it as a public menace. Second, we have very little knowledge of the prevalence and extent of the disease. Third, through a false sense of modesty, it cannot be given the publicity it deserves.

Difficult as it is to gather data, these few statistics will serve to emphasize the immensity of the problem with which industrial physicians are confronted. The city of New York has for the past few years made venereal diseases reportable. In the fourteen weeks from July 4 to October 3, 1914, 25,633 infectious diseases were reported. Syphilis stood first, with 6,432 cases, or 28 per cent.; Tuberculosis second, with 5,525 cases, or 21 per cent.; Diphtheria third; Measles fourth; and Scarlet Fever fifth. This report, however, shows only those cases that were reported, probably 50 per cent. It is inconceivable then that a disease of such extent is not a cause of industrial inefficiency. In the army during the fifty-three weeks ending September 27, 1918, there were reported 178,204 venereal diseases. About 16 per cent. or 27,000 of these were syphilitic. During 1917, 750,000 days were lost to the army through venereal disease, but in the year 1918 the loss reached the alarming total of 2,067,000 days. The fact that has been both encouraging and surprising from the army point of view is that 85 per cent. of the soldiers so afflicted were already infected when they entered the service.

Colonel Vedder in his recent book *Syphilis and Public Health* says that 20 per cent. of the young adult population from which the army is recruited, in peace time are luetic, and he estimates that 5 per cent. of our young men in college are infected. He says "Since syphilitic infection is so common and so productive of disability, and has so far evaded sanitary control, it is believed that syphilis is a greater menace to the public health than any other single infectious disease, not even excepting tuberculosis." Osler has recently said that of the killing diseases, syphilis ranks third or fourth. He estimates the actual annual deaths at 60,000, which makes it rank first among the infections. Leredde estimates that syphilis kills 25,000 each year in France.

Some careful investigations have been made on the incidence of syphilis among the tuberculous of the country, and it has been estimated that between 20 per cent. and 30 per cent. of those so afflicted also suffer from lues. It has been shown many times to be an important predisposing factor in tuberculosis. In the last few years at a number of the general hospitals in larger cities, Wassermann tests have been made a routine part of the examination. From a study of figures estimated in this way, it is fair to state that between 20 and 30 per cent. of the patients in the average hospital are infected with syphilis. In view of these figures, can we say that syphilis is on the decrease?

The campaign against this disease directly concerns industrial physicians. Syphilis is a powerful factor in industrial inefficiency. While the acute primary and secondary lesions are a possible source of infection to hundreds of innocent employees, it is the chronic tertiary untreated or insufficiently treated cases that work havoc in industry. They are the potential causes of accidents to themselves and to others. When injured, their disability is always prolonged. They are generally chronic absentees—inefficient employees—and a source of trouble at all times.

The following case records clearly demonstrate the necessity of ferreting out all old luetic cases and placing them under proper treatment.

Case 1.—Sam W., aged 42, Norwegian by birth, was one of our most constant visitors at the hospital. He was of a sullen, morose disposition, and there was constant friction between him and his foreman. Previous to his employment in this industry he had been a sailor, and during that life had suffered a fractured spine by falling from a mast. After working for us a short while a box accidentally fell from a loft, injuring his back. He was taken to the hospital and a careful examination made, which disclosed nothing but his old fracture. He recovered and returned to work, and was a fairly satisfactory employee for several years. Then he began to be a visitor at the hospital. He was certain the injury to his back was responsible for the pains in his back and legs. He was given a thorough physical examination and it was found that his knee jerks were sluggish, a Romberg sign was present, and his pupils failed to react. A Wassermann was done on his blood and spinal fluid, and both found positive. He was immediately transferred to our clinic and energetic treatment begun. While his tabes is not cured, Sam is a much improved man. He takes his treatment conscientiously, his back and leg pains have disappeared and his efficiency has improved 60 per cent.

Case 2.—B. R., aged 44, a foreman in one of the busiest departments, became so inefficient in his work as to attract the attention of his manager and his fellow employees as well. From a bright, active, energetic foreman, he had suddenly changed to an absent-minded and careless workman. Important orders were forgotten, and worry over his condition was evidently making things worse.

Knowing that something was wrong, his manager sent him to the doctor's office for a complete examination. Several months previously, while on his vacation, standing on his front porch one evening, without any warning he fell over, became unconscious, and remained so for a short time. When he recovered consciousness, he knew nothing of what had happened. After a few days' rest in bed he recovered and returned to work. The incident bothered him a little, but not to the extent it was destined to when he had several more similiar attacks. His family physician pronounced it "nervous exhaustion", but he did not improve under treatment. He hesitated about consulting the company physician for fear of losing his job—a fear that had no basis. He was thoroughly examined, a Wassermann was done as a routine measure and proved to be very positive. His spinal fluid was then tested and also proved to be positive. He was told of his condition and then admitted having had an initial lesion twenty years previously, for which he had taken little or no treatment. Anti-syphilitic treatment was begun at once, and has been continued ever since. His health is very much improved, he has had no more attacks and his work has returned to better than its previous standard.

Case 3.—B. C. (female), aged 18, was a thin, poorly nourished girl. While working in the millinery department trimming hats, she scratched the back of her hand with a piece of wire. She thought nothing of it, and did not report to the doctor's office. A few days later she developed a lymphangitis of the hand and forearm. She was taken to the hospital and the condition rapidly subsided under hot dressings. She was sent home, and a few days later had a recurrence of her trouble. It again subsided under proper treatment, but did not remain so long. After about three weeks of this disappearance and reappearance, a Wassermann was made. It proved to be very positive. The girl showed other unmistakable signs of congenital syphilis. Anti-luetic treatment was begun at once and she began to improve. The treatment helped a great deal, but this girl was at and away from work for two years before she became well enough to be an efficient employee. This was a case of congenital syphilis complicating a very simple infection. Practically two years of employment were lost, a rather expensive case for the industry.

Case 4.—H. G. (female), aged 20. A helper in the restaurant was sent to the doctor's office by her manager because of a suspicious cold sore on her lip. Examination showed the sore to be simply teeming with spirochetes. Careful inquiry into her history disclosed the fact that she had been married two months previously. I explained to her the necessity of talking things over with her husband. He consulted me at my office, and I found his mouth and throat full of mucous patches. He had had the infection for a year, but had taken no treatment because he could not afford it. The girl was laid off and she and her husband were transferred to our industrial clinic for treatment. Ignorant as this girl was of the nature of her infection, she was a possible source of trouble to hundreds of innocent fellow employees.

These and countless other cases I could enumerate ought to be enough to make the industrial physician realize that this nationwide campaign against the venereal diseases is his fight. The program here outlined for industrial physicians to follow is, in many features, similar to that carried out by the army in the war. Under this program the annual venereal disease rate in the army has dropped from 83.6 per 1000 in 1915 to 20 per 1000 in 1918.

The program embraces four parts:

1. Educational and social measures similar to those carried out by the Commission on Training Camp Activities. This should include talks, lectures, and the distribution of pamphlets concerning the disease; personal talks to the girls by a woman physician, the chief nurse, or a well-informed social worker, and talks to the men by the chief surgeon. These talks, if they are of the right

kind, are of a great deal of value. Exhibits of posters, lantern slides, and moving pictures can all be used to advantage. The film *Fit to Fight* can be borrowed from the Public Health Service at any time. Anything that diminishes sexual desires should be encouraged. Baseball teams, track athletics, basketball, and bowling teams should be organized. These measures have been of immense value to the army. They should also benefit our civil population.

2. Prophylaxis after exposure. It is unreasonable to expect and decidedly impracticable for industries to maintain prophylactic stations. They will, in the near future, be installed in every industrial community by the Public Health Service. It is our duty to teach men that once they are exposed, prophylaxis does protect in the great majority of cases, if taken immediately after, or within six hours of exposure—the quicker the better. This treatment includes scrubbing well with soap and water, washing with a mercuric chloride solution, dilution 1:2000, a thorough rubbing with 33 per cent. calomel ointment, and an injection of 2 per cent. protargol to prevent gonorrheal infection. In the army, of 23,702 men taking prophylaxis over a period of twenty-two weeks only 1 per cent. developed a venereal disease, although many did not apply for many hours after exposure.

3. Medical examination of employees. By a careful examination of all male and female applicants for work, and the supervision of the health of the old working force at every opportunity, many cases of syphilis will be discovered. Male applicants can be stripped and a careful examination including Wasermann test done on all suspicious cases. Females, of course, cannot be examined as thoroughly, but a careful inspection of the mucous membranes and skin can be made, Wassermann done, and, if the industry has a female physician, vaginal examination made when it seems necessary.

The outfit for careful examination of initial lesions can be installed in any laboratory at a cost of not to exceed $25. This sum will buy a dark field illuminator and good carbon light, which are all the equipment required in addition to a microscope. The technique for examination of spirochetes is easily mastered and this examination should be made of all lesions that bear any resemblance to lues. The day of waiting for secondaries to appear before administering treatment is past. Suspicious cold sores of several weeks' duration should always be examined, especially if there is accompanying glandular enlargement. In two years' time twelve lip chancres in girl employees in one industry were discovered.

The officials in industry must be taught and encouraged to adopt a broader policy than has heretofore been followed. Too often in the past employees have been dropped from the pay roll the moment they showed signs of venereal trouble. This tends to discourage physician and patient. Employees, exposed and afraid to report to the reputable physician in charge of their health, evade him and consult the advertising quack. They are bled financially, poorly treated, if treated at all, and then left when their money gives out to go untreated, worrying over their expended money and the fear of the disease. This one factor alone is a cause of inefficiency.

The industrial physician in his daily work comes in contact with such a large number of people that if he is at all the right kind of man he is in a position to do untold good to a large number of them. He must have the confidence of the employees, but once he has that it will be surprising to him the number of latent and chronic cases of syphilis he can unearth.

4. The Treatment of Syphilis. When once discovered, what should be done with the disease? J. H. Blaisdell of Boston selected sixty cases that came to him in the infirmary and found that between the time of their infection and the time of their first appearance for treatment these cases had exposed 134 other individuals by coitus, 442 through family life, 651 by occupational association—in all 1,227 people. At least sixty new cases developed and only two were brought under treatment. This points out our course. In addition to instituting thorough treatment in those we find with syphilis, run down the sources of their infection and aim to get these individuals under treatment. Discover the contacts of our case if possible and examine them thoroughly. The industrial physician has the opportunity offered few others of doing efficient and valuable public health service.

What should constitute thorough treatment? We have at Rush Medical College in Chicago a large clinic for the treatment of syphilis. Here we have tried to treat syphilis as efficiently as our modern methods will permit. Arsphenamine intravenously and mercury intramuscularly are our weapons. The course of treatment consists of six injections of arsphenamine at five day intervals. Between each injection of arsphenamine, one or two injections of mercury are given intramuscularly. After completing the six arsphenamine injections about fifteen or twenty injections of mercury are given three times a week, or at five day intervals, depending upon the salt of mercury used. This constitutes one course of treatment. The patient, after completing this, rests six weeks, and then a Wassermann is done. If the findings are still positive the course is given again. If negative, he rests for three months before another blood test is made. If positive then, another course is given. If at the end of two years his blood and spinal fluid are found negative, and, by repeated examinations, he has shown no sign of lues, he is discharged as cured. It should be impressed upon the patient time and again that he is not to discontinue treatment until he is told to do so by his physician.

It has been found from experience that very few patients will refuse treatment once they have their condition carefully explained to them. A good confidential talk will convince even the most ignorant and skeptical of the necessity of taking thorough treatment. Sometimes patients become a little careless about reporting after their sufferings have been alleviated, but through our social workers we keep in touch with them, and constantly remind them of their duty to their families and to themselves.

The cost of treatment is the thing that keeps most patients from taking care of themselves. With the cost of living exhorbitant as it is, the average man with a family and a monthly wage of $150 or less, has a hard enough time paying for the bare necessities of life, without thinking of incurring doctors' bills for a disease that is not bothering him appreciably. Pay clinics are the solution for this problem. Clinics which will permit people of the middle class to obtain expert medical care for a small sum.

If we are to eradicate syphilis, and that is the question of the hour, we must, by all means, treat the existing cases of it first. These are our source of infection. In Chicago, we have been fortunate in having a large venereal clinic in connection with our industrial medical and surgical clinic. There all cases referred from the various industries are treated free of charge, or at a very small cost. Other industries will not be so fortunate in being located near a clinic. In the very near future, however, they may be aided by the Public Health Service. The number of clinics being operated solely by the Public Health Service now is twenty-six, in co-operation with state boards of health, 134. The number of clinics is being rapidly increased and it is believed that within a short time no industrial community will be without one. If an industry is not located so that recourse can be had to one of these, the staff can readily establish one where arsphenamine and mercury can be given at a very slight cost to those employees who, through financial reasons, are unable to consult specialists. Eliminate the financial question and all infected employees will only be too glad to take care of themselves. Once this is done efficiency is bound to increase.

Industrial physicians, the public health servants of their own communities, should encourage the building of hospitals for the treatment of venereal diseases. The number of hospitals equipped for and willing to treat acute syphilis is very small even in our large cities. The army method of treating acute gonorrhea and syphilis at the base hospital, by keeping the patient in bed, and in a way quarantined, is a rational method of treating these diseases. It is only by keeping the acute cases under constant surveillance and from association with the world at large that we can hope to eradicate successfully the source of infection. For that reason, industrial physicians must work for the establishment of hospital wards in all hospitals, for this treatment. This will mean a big step in helping to eradicate the disease.

By following out some such scheme as has been indicated in this article, industrial physicians can play a large and important part in this campaign against syphilis, an inestimable factor in industrial inefficiency.

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DISCUSSION

Maj. Warren Walker: When asked to open the discussion of Captain Oliver's paper I thought a very good way would be to tell you in a brief way what was done in the Army toward combating venereal diseases. I think I can say without exaggeration that no one realized the prevalence of venereal disease in private life as was shown by the drafting of the men into the Army. Roughly, it is shown that out of 4,185,220 men in the Army in this country, 230,000 had venereal disease, which is 5.4 per cent. 16.16 per cent. of these had syphilis, and in 90 per cent., or 33,461 of these, the disease existed prior to enlistment. Had Wassermann tests been done on all, this total would have been doubled at least.

The Surgeon General anticipating large numbers of venereals formed a committee to outline methods of attack. The methods as outlined divided themselves into four classes as follows:

(a) Social measures to diminish temptation.
(b) Education in regard to venereal disease.
(c) Prophylactic measures against venereal disease.
(d) Medical care.

Taking these up in order: First, (a) Social measures to diminish temptation, which included (1) Suppression of prostitution and the liquor traffic and provision of proper social surroundings and recreation. In camps the question of suppression of prostitution and liquor traffic was greatly aided by the zone established about them which was controlled by the military police, working in conjunction with the civil authorities, Commission on Training Camp Activities, and other agencies. Outside of the zone many organizations aided, such as State Councils of National Defense, Local boards of Health, Women's Clubs, the Press, and religious organizations.

(2) Provision of proper social surroundings. All who have been to camps know of the work done by the Red Cross, Y.M.C.A., Y.W.C.A., the K. of C., and other organizations both within and without the zone, in the way of providing places where the men could meet their women friends, have music, games, and lectures. Pressure was brought to bear on the civil authorities to suppress vicious amusement places and to clean up in general.

Second: (b) Education in regard to venereal disease. Lectures were given to the men by the company commanders in which they were told the dangers, etc., of venereal diseases. Pamphlets were distributed to the men upon reaching camp explaining what venereal diseases were and the dangers. Educational films and pictures were shown to the men whenever possible.

Third: (c) Prophylaxis. Prophylaxis, what it was and the necessity of taking it was explained to each company. If a man developed venereal disease and had not taken the prophylaxis he was liable to court-martial. Prophylactic stations were placed in convenient places both in the camps and large cities, open day and night to the soldiers, who were encouraged to use them as early as possible after exposure as prophylaxis has proved nearly one hundred percent effective if used within an hour. The prophylactic stations were in charge of a Sergeant trained in its administration.

Should a soldier become infected, an effort was made to obtain the name and address of the woman responsible. If she could be located she was investigated and an attempt was made to have her arrested or quarantined, and treated until cured.

Fourth: (d) Medical care. It is not necessary to go into the details of treatment. It was much easier to treat these cases in the Army than in civil life as the medical officer had absolute control over the men and regular treatment could be employed.

Acute gonorrheas and syphilitics with open lesions were treated in the base hospital; the syphilitics until the lesions were closed and the gonorrheas until the acute stage had subsided, after which they were treated in the Development Battalions where they did a varied amount of work depending upon their condition, and treatment continued until they were rendered non-infectious.

How effective these measures were in the Army is well shown by giving the result in one camp where 113,000 men were examined upon arriving at the camp, and over 27,000 were found to have venereal diseases, and during a period of 18 months following enlistment but 360 new cases developed.

All of the methods outlined above can be used in industrial work with but few modifications. The educational and social measures can be cared for by the company physician and social worker. Prophylaxis may be given by the company physician but this will not be satisfactory in the majority of cases as the time elapsing between the exposure and its administration would be too great. Even though the company had prophylactic stations, in the majority of cases the worker would live so far away from the plant that they would not or could not apply for treatment.

If prophylaxis is to be used or recommended there should be a station in the city in charge of the Public Health authorities.

The average worker in an industrial plant does not report having venereal disease to the company physician for fear of losing his or her position, while in the Army semi-monthly venereal inspections were made and very few victims of venereal disease escaped detection. I am of the opinion that the workers would gradually gain confidence and report to the company physician if it were known that they would not lose their position if they carried out the treatment and instructions prescribed by the physician.

Finally, as Captain Oliver says, nothing can be done with the venereal situation unless proper facilities are provided for the treatment of syphilis and gonorrhea. All hospitals should have a ward for gonorrhea and one for syphilis, where the acute cases can be placed, as was done in the Army.

Dr. Charles M. Harpster, Toledo, Ohio: I agree thoroughly with what the essayist, and also what Major Walker has said. I remember distinctly what Prof. Belfield told us last year at the American Medical Association: that prophylaxis, to have the best effect, must be used in the first hour after exposure. I believe that the compulsory examination and medical supervision of employees will help to solve the problem. Of course, in civil life, we have not the same facilities that we have had in the army and navy; but I believe that we can carry out measures that will increase the efficiency of those suffering from this condition.

I was glad to hear Dr. Walker speak of the relationship between tuberculosis and syphilis. It was my privilege to attend the last International Congress on Syphilis, held at Rome. I was to read a thesis on hygroma. I did not know much about it, except what I had read, when I began to study the subject. We had been taught and led to believe that it was primarily due to tuberculosis; but when I started to study the subject (I want to say that I do not believe that many of us have many cases in a life time; I have attended thousands of traumatic cases, but do not believe that I have had more than a dozen cases of hygroma), I found that every case cited in our literature was probably due to tuberculosis. One of my cases was a man who was a steam fitter, and he was continually striking his wrench with his wrist or palm of his hand, so that he developed hygroma of the tendons of the wrist. We took a Wassermann as a routine, and found that he had syphilis. Under anti-syphilitic treatment, he was entirely cured.

Another man had injured his testicle, and had a hydrocele. It was tapped for a while, but finally became very troublesome. We removed the testicle and a Wassermann indicated that he had syphilis. He had the rice bodies present in the testicle itself.

When we studied the etiology of these cases we find the relationship between tuberculosis and syphilis. Regarding the presence of syphilis among those who had passed a rigid physical examination, in going over about five thousand records, I found that we had about one case in seven in which Wassermann examinations were made, and that in those cases in which we were permitted to take Wassermanns, we found five cases in one hundred. So these figures bear out pretty well the findings recited by Dr. Oliver.

There are many things that we could say. I do not know what is the view in the minds of those present as to proper intensive treatment of syphilis. I was glad that Dr. Walker brought out the proper method of handling syphilis, to my mind. We have repeatedly discussed the proper intensive treatment of syphilis. MacDonald, of London Locks Hospital is one who has written very extensively upon the subject; and his latest views correspond with what Dr. Oliver has told us. To accomplish the most good, we must give the syphilitic patient this intensive treatment. I thank you for your calling on me and giving me the privilege of discussing this most excellent paper.

DR. RUSSEL A. JEWETT, U. S. Public Health Service, Washington, D. C.: The Public Health Service is at work on a national industrial program for eradicating industrial diseases. We have attempted to get information on the subject, first, as to the amount existing among employees.

I find from notes made at firms visited and from surveys made, that the firms who have had their employees routinely examined, averaged about two per cent. of venereal infections. Other firms have had as high as eighty per cent. In fact, one firm that had, at our suggestion, examined their employees and started treatment, reported eighty per cent. At another place, ten per cent. were infected. The employers said that they had examined, and found forty per cent. infected. I find that employers are ready and willing to establish venereal disease treatments. The question uppermost in their minds is, Will the men take advantage of the service offered? I can answer this, I believe, in the affirmative. The men are willing and ready to avail themselves of proper skilled treatment. The cost of the clinics is the second question that employers are interested in. We have worked out, as nearly as possible, the cost of clinics. As you know, where you have medical service established, the cost will not be much to include venereal disease treatment in your medical service. For plants who have no medical service and do not employ enough men to afford one, I think that a group system answers the purpose for the industries, provided that they do not care to connect up with a community clinic. For instance, in Chattanooga, the manufacturers decided to establish free clinics to give treatment for syphilitic and venereal cases. The factory pay roll basis of two dollars per thousand took care of the finances, not only for venereal treatment, but for general medical service. The employers are willing to pay two dollars per thousand a year on the pay roll, because they find that it is a good investment and makes good dividends.

In the near future, in order to gather information as to what industrial plants are doing and have done, we are going to send out a questionaire to all industrial physicians, asking for their experience. I will not read this to you but the average questions will be asked. We should appreciate it very much, if all industries would answer these questions, so that we may have information available as soon as possible for answering inquiries from those who desire to go ahead with this work. The industrial physician can be of most service in this program by including treatment for venereal diseases in his service. In many places the community can be interested, and will start a community clinic; and the industrial physician can refer his cases to the community clinic if so desired.

Dr. Otto P. Geier, Cincinnati: Some of you may be interested in what the State Health Department, in connection with the State Health Service, is doing in Ohio. It is hiring a woman to lecture in the factories. We had given the film, "Fit to Fight"; but the real impression was made by this woman, who talked to groups of about one hundred in a small room, where there was personal contact. Those in the audience flocked to her after the lecture, and talked to her in a personal way; and to me, the whole effect was perfectly amazing.

Dr. Mock: I am glad to have had that part of the discussion, it was worth hearing. I shall now call on Captain Oliver to close the discussion.

Captain Oliver: With reference to handling this problem, our experience in Chicago, at one of the clinics, has shown that if a man knows that he can get proper and efficient treatment for very little cost or no cost at all, he will be only too glad to take advantage of it. We have had an evening clinic opened two evenings a week, and the attendance has been startling. Ninety to one hundred men come twice a week and take intramuscular injections of mercury bichloride or salicylate, which is sometimes extremely painful afterwards. It shows that they are only too glad to avail themselves of the opportunity for taking treatment, provided that they can afford it.

DR. MOCK: The American Medical Association, this year, has recognized Industrial Medicine in an unusual way. Their scientific assembly met in Washington and decided to turn over the Miscellaneous Topics Section to Industrial Medicine and Surgery. This gives an opportunity of presenting to the whole profession our specialty, in a way that we have never had before. I hope every one here today will help swell the audience.

I wish to turn over to the secretary of this Association a privilege that I should like to have, but because of the long friendship between the next essayist and the secretary, I want Dr. Patterson to introduce him.

DR. PATTERSON: The next topic is, *"Is War-Time Surgery Applicable to Industrial Surgery?"* It is a great pleasure to me to have the privilege of introducing to the Association of Industrial Physicians and Surgeons, the chairman of the Conference of Physicians in Industrial Practice, Col. John Moorhead. He is just back from France, where, for practically twenty-three months, he was in service right at the front line, and, for conspicuous gallantry, was awarded the Croix de Guerre by the French government. There is no man who has done more to spread the fame of industrial surgery than Col. Moorhead, and it gives me pleasure to present him to you, to tell us whether the war surgery practiced over there is applicable to the industrial accidents of this country.

IS WAR TIME SURGERY APPLICABLE TO INDUSTRIAL SURGERY?

JOHN J. MOORHEAD, M.D., F.A.C.S.

Associate Professor of Surgery New York Post-Graduate Medical School and Hospital, Formerly Lieut. Col. M.C., U.S.A. (A.E.F.)

War surgery in the Evacuation Hospital zone was essentially the surgery of extensive lacerated wounds and compound fractures, this group comprising about 90 per cent. of all the lesions produced by shell, machine gun and rifle fire. The main impression that I received of high explosive wounds was their multiplicity and their extent, for it was rare to find only one wound or a wound that failed to look as if a dissection had been attained, many of them producing an exposure as if in a biopsy.

The immediate complications of war wounds were shock and infection. The shock often was due to blood-loss in combination with cold, exposure, hunger, thirst and exhaustion. The infection was frequently of the gas bacillus or other anerobic type, although for the most part the ordinary pus producing staphylococci and streptococci prevailed. We actually dreaded the streptococcus more than the gas bacillus for it was more common, more resistant and persistent, practically always present in bone infections. The lesions of the organs within the skull, thorax and abdomen were fairly numerous and they also were characterized by their multiplicity and severity. Of all war injuries, I believe those of the skull and abdomen more closely paralleled civil injuries than any others because only those relatively minor survived long enough to reach us in our forward zone. Chest wounds were unique and of a type almost never seen in civil practice and much to our surprise and satisfaction many of them did surprisingly well when subjected to the special technic devised for their relief. Joint wounds were also treated after a new method and they likewise responded well. Purposely I have said nothing as to vascular or neural injuries, for their treatment is quite similar to the less grave injuries of civil life.

The adaptation of war surgery lesions to those of industrial surgery finds no *exact* parallel because of the marked difference in their causation, the inherent differences of types of infection and the all important elements of the time elapsing between the onset of injury and the receipt of the patient. One other salient factor is the age and physique incidence of the soldier patient as compared with the patient in civil life. This is a cardinal difference to which must be added the morale of the soldier, the will to get well—an attribute all important in the outcome. Our patients in civil life are often beyond the draft age, their physique is often below par, their vitality often has been affected by disease, malnutrition or by alcohol. The soldier patient has an asset in his youthful, sturdy physique; the civil patient often has a pathological deficit to which the injury adds another burden.

This brief review prepares the way to answer in the affirmative the inquiry propounded by the title of this paper. War surgery is applicable to industrial surgery in the following particulars:

1. *Wounds.* Experience taught us that infection was the only real foe to primary union and that if we could rid the wound of devitalized tissue, healing would proceed favorably because germs could not live in healthy surroundings. This lead to what is termed "mechanical sterilization," as distinguished from "chemical sterilization." The former means that with the knife and scissors all damaged tissue is removed until the part looks healthy, until it bleeds and until muscle contracts. This process of cutting away is known as "Debridement" (literally unbridling) and only such parts are removed as are manifestly unhealthy. It cannot be stated too strongly that this form of sterilization is not sacrificial and that the process is more like paring the surface than exsection of it. In cases thus treated within the first 18 hours, experience showed that primary suture could be made with safety and success. Cases arriving after the 18-hour period were treated in the same way, but the suturing was postponed until between the third and sixth day, bacteriologic tests meanwhile proving the presence or absence of streptococci. If these germs were absent even if others were present, this "delayed primary suture" method (or "primo-secondary" suture) would prove successful if the wound appeared clinically healthy.

Wounds received late and already suppurating must be subjected to the procedure known as "chemical sterilization," and when relatively pus free they too can be sutured, the method being known as "secondary suture." Mechanical sterilization may be termed the aseptic method; chemical sterilization the antiseptic method. Antiseptics of many kinds were employed either in the form of the familiar wet dressings or by intermittent instillation after the method of Carrel, using the hypochlorite solution of Dakin made after Daufresne's formula.

The application of these methods to civil surgery is very easy and is called for principally in lacerated wounds associated with bruising or fraying of the soft parts. The vast majority of industrial accidents are cared for promptly and the types of infection are relatively less virulent; therefore the essential element in success is to rid the wound of contained infection by debridement or antiseptics, bearing in mind the possibility of re-infection unless our procedures are carried out with every aseptic detail.

I would emphasize the need for exploring the entire wound under the guidance of the eye, clearing out of it all foreign material, stopping hemorrhage, and then flooding it with full strength iodine before suturing. This applies to the ordinary wound in which the edges do not require paring because they are neither bruised nor frayed. I believe that every wound so sutured should be drained by a strand of silkworm gut or rubber, the drain to be removed in 24-48 hours. If there is any question as to the sterility of the wound at that time, the secretion at the inner end of the drain can be examined and the exact nature of the organisms definitely determined. For wounds already infected, gaping or with open surfaces, there is no better treatment than the Carrel-Dakin procedure. This unfortunately requires special preparation of the solution and a special technic for the application of it. The proper carrying out of this technic is in effect an aseptic operation; it requires training, it is time consuming and it therefore cannot have wide application. Aside from the value of the solution, I believe that one of the great elements in the success of the method is the care with which it has to be applied and the improbability of reinfecting a wound by contact with soiled instruments or fingers. Failure to sterilize an ordinary wound by this treatment is to be charged more to the surgeon than to the method. To use the Carrel-Dakin ritual is not the road to wound salvation unless all the precepts are carefully followed. In this connection it is profitable to state an item of war experience to the effect that persistent streptococci infection usually means the presence of infected bone; and that persisting discharge usually means the presence of a foreign body, often frayed or otherwise devitalized soft parts.

II. *Fractures* should be much better treated in future as a result of war experience, not only because a compound fracture can be converted into a simple fracture by primary or delayed primary suture, but also because the profession in general have become aroused to the importance and technical difficulty of this branch of surgery. Industrial surgeons have long recognized the need for better care of this class of cases even as they have realized that the treatment requires more skill and judgment than is ordinarily needed to remove an interval appendix or to perform a herniotomy. The various splints used for war fractures of the long bones should have a wide application. First-aid men should and can be taught to apply Thomas splints for the arm or leg and these same appliances with appropriate overhead frames can be used for the treatment of nearly all the fractures of the extremities. In the treatment of broken bones it is important to recognize that there are two grades or classes, speaking generally. One class is what may be termed the *displaced variety,* the other the *non-displaced variety.* The second class requires little if any attempts at reduction or setting and our only concern is to keep the part at rest by suitable splintage. The other class, however, requires setting of the displaced fragments before we can expect a splint to be of service. In war experience practically all the cases were of this displaced type, badly compounded and comminuted for the most part. Many limbs were saved by rigidly applying mechanical sterilization technic to the soft parts, removing bone fragments that were devitalized or detached. This same principle is applicable to civil surgery, and no limb should be amputated unless the main vascular supply has been severed, the main bone is hopelessly pulpified, or infection is of such a grade that systemic symptoms are present.

Fracture of the femur was the greatest fracture problem of the war and the majority of surgeons in fracture centres came to rely more and more upon traction applied to the bone itself rather than when applied to the soft parts overlying the bone. The English surgeons advocated the calipers traction device (known to us as the "icetongs") and I saw this in use in some of the British hospitals during a visit to England and Scotland and after the armistice was declared. This is a simpler method than the Steinmann nail and the application can be made under local anesthesia.

The Finiochetto stirrup is used by some French surgeons for the treatment of all fractures of the lower extremity, as this device when placed over the concavity of the os calcis produces a very considerable traction on the whole lower extremity. The Chutro or Hawley modification makes the introduction rather easier and more exact. The calipers and stirrup will be for me standard methods of treatment in lower extremity fractures to the exclusion of all other means in selected cases.

Too much stress cannot be placed on the fact that in a fracture the broken bone is only one part of the damage inflicted, and that the associated injuries to the soft parts and joints are often more important. This means that after a broken bone is suitably reduced and splinted, our main treatment should be directed toward the associated lesions in the contiguous parts. The day has gone by when we can discharge our patient as cured when union has been attained. I believe we do most for the patient when we place the fractured bone in a splint that gives access to the limb for massage and motion designed to prevent atrophy, and the adhesions growing out of teno-synovitis, synovitis and arthritis. There are few fractures once set in which massage and motion are contra-indicated from the very beginning of treatment. There are "three R's" in fracture treatment, namely, Reduction, Retention and Restoration, and of these three the last named is really the most imporant and yet the most neglected. The restorative, re-educative or reconstructive side of war surgery should and can be carried on into civil surgery, but the prevention of much of the crippling from fractures can only be attained by recognizing that while reduction and retention are necessary preliminaries, restoration of function should begin early and not after the fracture has healed. Let us not forget also that deformity of bone does not necessarily mean diminution of function. Witness the almost constant deformity following fracture of the clavicle with perfect function of the shoulder if we do not immobilize the joint until we virtually seal it by too long fixation.

III. *Joint Injuries* in war taught us many valuable clinical facts to which Willems of Belgium, in particular, calls our attention. It has now been demonstrated that the synovial lining of a joint is capable of standing a relatively large amount of trauma and in that respect as in others it resembles the peritoneum.

Joint penetration as from recent wounds or foreign bodies is now treated in precisely the same way as wounds of the soft parts, that is by the mechanical sterilization which cuts away sparingly the tract leading to the joint so that nothing but a healthy surface is left. Ether is then used to wash out the joint cavity, all bleeding is stopped and the synovial membrane is separately sewed, then the muscle-facial layer alone, and finally the skin. No drainage whatever is used. Then instead of putting the joint at rest in a splint, only a soft dressing is applied and the patient is made to move the joint each day through increasingly wide angles. In a joint already the site of septic arthritis, a lateral or bilateral incision is made giving access to the joint interior, it is washed out with ether and again no drainage is inserted, but instead the patient is forced to move the articulation so that the normal flexion and extension literally squirts the pus out of the joint cavity. In a septic knee, the patient is made to walk; in an elbow, exercises are prescribed enforcing bending and straightening the arm and forearm. No splintage of any kind is used and motion is the key note of success as opposed to rest. This type of treatment has an application in many civil injuries and it is based on enough experience to warrant advocacy. Ordinary synovitis of the knee will in future be treated by me by lateral aspiration until all the fluid is removed and then the patient will be made to walk. Re-effusion will be treated by aspiration as often as may be necessary and in this way the disability period should be much lessened and I feel sure there will be far less stiffness from prolonged immobilization. In civil life this procedure of immediate mobilization was long ago successfully used in the treatment of a sprained ankle and the principle has now a very much wider application.

IV. *Blood Vessel Injuries* in some cases were successfully treated by placing over the puncture a flap of fascia and this procedure may have a limited application in civil life. Some French surgeons have reported a few successful cases in which an elbowed silver or glass tube has been placed in the lumen of a main vessel to bridge a gap until collateral circulation has been restored.

V. *Nerve Injuries* were exceedingly numerous but in general the outcome of suture has been disappointing inasmuch as a very long period ensues before restoration occurs. The best practice seems to be to have the separated ends free of any fibrous tissue, to join them by numerous fine silk threads and not to wrap the place of junction in fascia or any other material. The application of this newer type of neurorrhaphy to civil life is of course quite evident. When a gap exists, the external cutaneous nerve of the subject is usually chosen to bridge the defect. In the musculospiral and in the peroneal types of involvement, transplantation of tendons at the respective joints is a favorite method as this can be done at once so that the wrist drop and ankle drop may be overcome more promptly than if neurorrhaphy alone were done.

VI. *Visceral Injury.* In the *skull*, foreign bodies are brought into better view if a soft rubber catheter is introduced into the wound tract and through this large amounts of sterile water are poured and thus pulpified brain tissue is removed by hydraulic pressure. A number of these cases have been operated upon under local anesthesia and experience seems to indicate that primary closure of the dura and skull should be made, when possible.

I know of nothing new in connection with the treatment of fractured skull, except that in certain cases with mounting blood pressure, relief is sometimes obtained by repeated spinal taps. The same applies to the delirium seen with head injury and to the headache so often complained of. For hernia cerebri, spinal tapping should be energetically tried before operation is attempted.

In *thoracic surgery* a new chapter has been written and this cavity is no longer a zone to be approached with temerity. Fortunately the war types of injury are rarely duplicated in civil life. We no longer need special pressure apparatus before opening the chest cavity and the collapsed lung can be brought out through the opening between the ribs and handled like a loop of intestine. The parallel is so apt that one French surgeon refers to the procedure as ''laparotomizing'' the chest. In empyema we have learned that repeated aspirations, with or without the injections of ether, will often effect cure instead of rib resection. We also know that early operation is not advisable in certain cases and that the main operative indication is the *pressure* from and not the *presence* of the effusion. After rib resection we treat the cavity on the theory that chemical sterilization will diminish the secretion and when this is accomplished and no streptococci are present, we close the wound by secondary suture and cut short what is ordinarily a very prolonged convalescence.

In *abdominal surgery* no particular changes are to be noted. The cases of abdominal war wounds that reached the hospitals were unfortunately often dying from shock, hemorrhage or peritonitis.

Plastic surgery has had ample scope and many of the deformities from war wounds are of course more or less equalled in civil life and can be subjected to the same kind of advanced treatment of which no special mention need be made.

Burns of the primary degrees are benefited by the various paraffine dressings with which you are all familiar and of which I need say nothing further.

The main lessons of war surgery to be carried over into industrial surgery are connected with

a. Wounds of the soft parts.
b. Fractures.
c. Joint injuries.
d. Thoracic injuries.

a. In recent *wounds,* we can improve our results by mechanical sterilization in all associated with bruising, fraying or devitalization of the edges. In those already infected, intensive chemical sterilization will do much to reduce infection leading to the stage where secondary closure can be made, thus diminishing the period of prolonged cicatrization.

b. In *compound fractures* we can treat the wound by mechanical sterilization, suture it promptly and convert the case into a simple fracture. *Simple fractures* of the long bones are effectively treated by the army type of splints, that is by the Thomas or Jones variety of splints. For femur fractures, the calipers will be found efficient. For some thigh and many leg fractures, the stirrup will give excellent results. We must not forget to regard a fracture as essentially a lacerated wound of bone and with that conception of the lesion seek to coapt the fragments so that primary and not secondary union may be attained. To carry out the analogy the splint can be regarded as a suture, and like the latter, is to be removed when it has served its purpose. Regarding a broken bone in this fashion will lead us to a more rational form of treatment so that our attention will be directed quite as much to restoration of function as to attainment of union. If we will look upon traumatic osteomyelitis not as a special disease but only as an infected wound of bone we will alter our treatment so that we will proceed to sterilize chemically the infected area, and when this is accomplished, we will remove the slough or scar in the bone, fill in the cavity by muscle or fascia or both, and then close by secondary suture. It will be quite useless to try to sterilize an infected area of bone unless adequate exposure is afforded, and hence in many cases liberal incision and drainage will be the first object of our attack. This conception of osteomyelitis means that we will no longer wait for a sequestrum (literally a bone slough) to separate spontaneously, but we will by adequate exposure open the area for the contact of our antiseptic. Dakin's solution acts especially well in bone infection, applied by the Carrel technic or by wet gauze tapes snugly placed into the recesses of the cavity, replacing them each 24-48 hours. This last method was first called to my attention by my friend, Lt. Col. George Hawley, who has had much experience with it.

c. Joint injuries in future will be better treated by early mobilization applying the principles of mechanical and chemical sterilization. Rigid and prolonged splintage in joint injuries is no longer to be advised, and the ordinary accident of industry affecting an articulation will profit by this new form of management.

d. Thoracic injuries will profit also, notably in the treatment of empyema and the removal of foreign bodies from the chest cavity. It appears to have been conclusively demonstrated that of all the tissues the lung has the greatest resistance to ordinary infection, doubtless because of the vascularity and oxygenation, and for this reason early attack may be postponed with greater safety than in any other cavity of the body.

Very little that is absolutely new has come of the war experience, inasmuch as the principles of surgery are well standardized;

the wider application of these principles under diverse and adverse conditions has, however, focused our attention on many problems that are met with in civil traumatic surgery. It is interesting to note that the same methods of wound treatment used in this war were also recommended as long ago as the Napoleonic wars by the famous French surgeon, Larrey. Indeed, Louvard (with whom I was associated for a time in France) has shown in his recent article in *Presse médicale* that many modern ideas revert to the time of Hippocrates.

DISCUSSION

Dr. Charles A. Lauffer, Wilkinsburg, Pa.: The battle smoke has not yet raised sufficiently for us to know how much of the war surgery was merely novel and unworthy of survival. Comparative methods and relative results are still inadequately recorded. Dr. Moorhead's lucid paper helps us evaluate the recent progress in traumatic surgery. As the developments of war surgery are epoch making in the annals of traumatic surgery, there are valuable lessons from war surgery applicable to industrial practice. Many surgical procedures that were relatively new, and applied in local spheres, have had an extended application. Several of the lessons from war surgery applicable to industrial practice are briefly as follows:

I. *Dakin's Solution.* The extensive, multiple, lacerated wounds, and compound fractures, encountered in war surgery, and the frightful infections developing in transit from front-line trenches to base hospitals, made infections the chief concern in war surgery.

Dakin's Solution contains free chlorine, highly volatile; when standardized just right, it is an efficient antiseptic. The trituration must be kept correct within 1-10 of 1%. With a low chlorine content, it is worthless; too strong, it is irritating. In emergency practice, the Carrell Technique is too fussy. Dakin's solution was a disappointment in the front-line trenches; neither has it proved itself advantageous in the industrial dispensary.

In the base hospital of the war zone, and in the fully equipped hospital at home, where patients are confined to bed, Dakin's Solution is valuable for cleaning up infections. Even in this field, it has its limitations, however. Where the streptococcus haemolyticus is involved, the use of Dakin's Solution increases the extent of the secondary hemorrhages, and may have to be discontinued. In such cases, alcohol is probably the best antiseptic.

II. *Ambrine Methods.* Ambrine was heralded as superior to all other methods in the treatment of burns. It proved advantageous for agonized "poilus," suffering from liquid fire wounds; in hospital practice, Ambrine, and its equivalents, have served well in extensive burns.

If repair goes on rapidly beneath the Ambrine dressing, well and good; but if Ambrine does not give results, the treatment should be changed. The welfare of the patient, rather than the Juggernaut of fashion, must be primarily considered. In ambulatory cases, Ambrine is one method of election, not always that of first choice.

III. *Primary, Late Primary, and Secondary Methods of Closure.* The International Abstract of Surgery for April, 1919, publishes Dr. R. T. Vaughan's (Chicago) paper on "Primary Suture of War Wounds." I suggest your careful reading of this paper.

The primary closure of war wounds duplicated the established practice of industrial surgeons. When wounds are attended to the same hour they occur, the industrial surgeon has better hopes for primary union following his primary closure, than the hopes entertained by the army surgeon, because industrial wounds are less extensive, less lacerated, and reach the industrial surgeon sooner. The time element is often the controlling factor in deciding upon primary closure.

In the past, I have argued the primary closure of wounds with Dr. Moorhead; I have sutured primarily scores of wounds, including those of scalp, face, neck, arms, etc., and I have contended that this is good practice, if the wound is seen immediately, and the toilet of the wound is conscientiously attended to, and redressings done daily.

With forceps, curette, knife, and scissors, practically all macroscopic foreign bodies should be removed and devitalized nonessential tissues excised. Gasoline, Tr. Iodin, Alcohol, are employed to kill the implanted bacterial flora; when the industrial wound is thus rendered macroscopically clean, and microscopically sterile, it is reasonably safe to suture it. It is, however, understood that such sterilization of a wound is only relatively complete; hence rubber drains may be employed, and sutures removed promptly, if infection subsequently develops.

IV. *Ambulatory Braces for Fractures,* such as certain fractures of the femur. The elimination of ankylosis of the proximal and distal joints, and the control of atrophy from disuse, are advantages claimed. Early mobility, and means to this end, without disturbing the reduction can well attract the attention of the industrial surgeon.

V. *Balkan Frames* with pulley attachments, swinging methods in the treatment of fractures of the long bones; in use before the war, but now more scientifically developed. The greater attention given extension and fixation methods has decreased the resort to bone grafting and bone plating procedures.

VI. *The High Development of Chest Surgery*, including major wounds of heart and lungs, as has just been alluded to.

VII. *Non-Interference in Bone Injuries* until certainty of the subsidence of latent infection, which may be dormant 3 to 6 months, and light up within 12 hours after surgical intervention. Latent streptococcic infection is especially liable to rekindle, hence the desirability of delayed surgical intervention, where secondary bone operations are necessary.

VIII. *Plastic Surgery,* in the reconstruction of the face, and the adaptation of masks, where surgery alone fails. The splendid co-operation by surgeons, dentists, and sculptors in this field should stimulate a continuance of such specialization, and the co-operation of allied experts for the amelioration of disfiguring disabilities, occurring from industrial accidents.

IX. *Flat Foot,* and the general care of the feet. Exercises for the prevention and correction of orthopedic defects have been devised, but this information is not as yet readily available. The care of the feet of industrial workers is bound to receive greater consideration as a result of the development of standard practices during the war.

X. *Early Active Mobility* in joint cases, and following fractures; discouragement of fixation, as contrasted with the old ideas of immobilization. The early opening of joints containing foreign bodies, and those showing early evidences of effusion and infection. Many knee joints squirted pus through free incisions as the patients walked. While such procedure is contrary to former practices, a high percentage of complete recoveries is reported, and a marked reduction in ankylosis.

Some of the newer surgical dicta are confusing and disconcerting. The rational of these procedures will eventually be better understood and in the meantime it is safe practice to follow the old adage: "Be not the first by whom the new is tried, nor yet the last to lay the old aside."

Dr. W. B. Fisk, Chicago, Ill.: I had the pleasure of serving under Dr. Moorhead in France for a few weeks. I wish to emphasize one point that he made, and that is the advisability of having patients exercise injured joints, whether infected or not. We all have probably had some experience with these cases. Our experience over there has demonstrated beyond a doubt that exercise for an injured joint is the most satisfactory method of treatment.

Another point that I wish to make is that every injured or fractured bone should be made a study in itself. Over there, we learned that a bone, injured by a piece of high explosive, could be fractured without the medullary cavity's being entered. We considered such bone injuries as clean; whereas in a bone that was fractured by a machine gun or rifle bullet, the medullary cavity was almost invariably entered, and such bone injuries invariably showed infection later.

Dr. George Edward Follansbee, Cleveland, Ohio: I wish to ask a question about this method of treating inflamed and suppurating joints. I have had quite an experience in treating inflamed synovial membrane and joints, and my experience has not been such as the reader of the paper stated, in regard to the use of these joints. I should like to hear about the physiology of that method of treatment. Resolution will take place more quickly at rest—at least, till active inflammation has passed. We were taught that we must not swab out the knee joints, but keep our instruments and gauze out of there. Has the physiology of knee-joint changed on account of the war?

Dr. John Moorhead, New York: My experience has been practically limited to the joints of the fingers. The patient went home and put the finger in hot water; and a few weeks later, came back saying that the finger was well. I have tried it, and all the cases came out with perfect union.

As to the physiology, to which Dr. Follansbee referred, in connection with mobilizing joints, we have been told to always immobilize inflamed surfaces; but after you do, you get stiffening; so I believe that movement is the proper thing to attempt.

Dr. J. C. A. Gerster, New York City: The fault is not with the method, but with the surgeon applying it. There is no more reason for an infection following the use of any of the metalic extension methods with a sound, healthy skin, than for getting infection of a hernia. When a hernia becomes infected the surgeon feels that he and not the method is at fault; the same applies to metallic extension in bone surgery.

Dr. John Moorhead, New York: In reference to the treatment of infected joints, I should like to say this: That I think that the main reason for changing the type of treatment has been the large experience that we have had in observing the freedom from infection of the synovial lining of the joint; and that it was able to take care of a great deal of infection, as well. In addition to that, we know that if we do put a joint at rest, the solid part of the effusion will lead to adhesions of the joint, as well as of the adjacent parts. Thus, in the knee, we get arthritis. I had the opportunity of spending a month with Dr. Depage and Dr. Sand in Belgium; and I never was in a better organized institution. Willems hospital was adjacent. For years past Dr. Willems, one of the professors in Belgium, had practiced the treatment of active mobilization of joints following injury. To see his patients walking around and squirting pus out of the knee joint was new to me, and I was perfectly astounded at it. When we extend joints, we give no opportunity for the effusion to seep. The individual does not have any seepage, develops no temperature, and gets well. Whatever may be our theoretical conceptions, we have had experience to show that we should at least give some attention to what I regard as one of the main clinical lessons that have come out of the war.

As to the synovial membrane of the knee joint, I should like to have you try the method of aspirating the knee joint, withdrawing all the fluid possible, sealing up, and immediately getting the patient up to walk. If re-effusion occurs, do it again. I have not had to aspirate more than twice. Compared with the old process of putting on a splint and going through the months of re-limbering up the joint, this method certainly saves a great deal of time for the patient and the physician.

Dr. Rene Sand, Brussels, Belgium: It is with the greatest joy that I am again among you. I hope that it may not be for the last time; I hope to become a regular commuter between Europe and the States.

I want to say a few words on the subject just spoken of. Under the influence of a French surgeon the mobilization of fractures and every kind of joint disease has been taken up gradually, in Belgium, as well as in France; and industrial physicians and surgeons have seen extremely good results from that practice. So that it is not, finally, a war discovery; but the war has made it more evident, and has taught the lesson to many more people.

I think that is true of every kind of war lesson. There is no such thing as a war lesson. All these truths existed before the war, but they were mostly disregarded.

That is all that I wanted to say.

A NATIONAL PROGRAM FOR INDUSTRIAL HYGIENE AND MEDICINE

By Col. A. J. Lanza
U. S. Public Health Service, Pittsburgh, Pa.

In discussing a national program for industrial hygiene, I should prefer, first, to call your attention to what has been the course of action during the past year. I think that most of you are familiar with the fact that last year the Public Health Service effected a co-operative agreement with the Department of Labor in establishing the Division of Industrial Hygiene and Medicine of the Working Conditions Service, that Division being made up in whole of persons detailed from the Public Health Service. Since last October, when the Division first began to function, we have established field officers in New York, Philadelphia, Pittsburgh, Cleveland, St. Louis, and Chicago. These officers are under field directors, mostly men well known to you, with staffs of industrial physicians, sanitary engineers, and the like.

I want to say that in each district our relations with the industries in the district have been most agreeable and pleasant, and most encouraging. We have everywhere met with a degree of co-operation and of hearty support that promises well for a high development along the lines of Industrial Hygiene. I might say, for the sake of example, that in the New York district, we have been actively engaged in making a survey of the industries of Perth Amboy. The Philadelphia office has been making an extended survey of the pottery industry, with particular reference to the lead hazard, the same being done also in East Liverpool and Zanesville, Ohio. The Chicago office is just about concluding a most extensive investigation of the industries of East Chicago. This will give you some idea of the type of work that has been done by these field officers since we have put them into existence. They were mostly general hygienic surveys, but in some instances had reference to certain specific occupational hazards; dealing with illumination, ventilation, the dust problem, fatigue and the like. We have also continued to maintain the elaborate studies on Industrial Fatigue under the leadership of Professor Lee of Columbia University, which were, and are still being done at the Scovel plant in Waterbury. We have also been able to continue to assign men to Professor Winslow, of Yale, for rather extensive investigations of ventilating systems, with particular reference to exhaust systems in connection with grinding and other dusty processes.

As far as we have ever been able to find out, there has never been a really scientific investigation of the various systems of exhaust as applied to wet and dry grinding processes. The State laws vary. In some States, a certain diameter of exhaust duct is demanded; and in others, for the same sort of work, a diameter three times as great is required. We have renewed our co-operative work with the Bureau of Mines, which was interrupted by the war; and we are again resuming our dust studies in connection with that most important of occupational diseases, miners' consumption. In connection with these dust studies, we are now putting on foot an investigation of the marble and granite industries in the Barre region in Vermont, which is being done under a general co-operative agreement between the Prudential Insurance Company and the State official authorities in Vermont, the Saranac Laboratory, and the Bureau of Mines.

Now, in outlining a national program for Industrial Hygiene, I find myself somewhat in a difficult position; because the delays incident to the progress of legislation in Washington, even at this late date, make it impossible for us to state to what extent we can pursue this character of work during the next fiscal year, which begins the first of next July. The Appropriation Bills of Congress have not yet been passed, and as the extent to which we can develop this work and carry it on is dependent on the funds that Congress places at our disposal, and we do not know what these will be, it is not possible at this time to give an accurate idea of how far we shall be able to proceed. The Public Health Service, in any event, however, is prepared to carry on its work on Industrial Hygiene, as it has started to do; but, on what scale, I cannot yet tell. However, I thought that it might be, at this time, well to call your attention to certain facts that have crystallized out, as a result of our experience during the past year.

As you know, we have, besides doing our strictly investigative work on the hygienic condition of various types of industries, also rendered service to various employers of labor in the way of giving advice and actual assistance in starting or amplifying, or changing, medical and surgical service; establishing dental service; or establishing standard forms of records. As the result of all these various types of work, and as the result of our experience generally in co-operative courses of instruction that we were able to initiate through the kindness and generosity of Professor Winslow of Yale, and Dr. Hayhurst, of Ohio State University, certain points have crystallized out that I think are, at this time, worthy of attention.

First, above all, there has been brought home to us the necessity of popularizing the physical examination of industrial workers. If there is one thing upon which the future of public health work along the lines of Industrial Hygiene depends, that thing is the ability to secure and record physical examinations of industrial workers. We must have these examinations, and we must have the information that we shall get from them, before we can have an accurate or a comprehensive knowledge of what are the health hazards of industry and what are the reactions of a man to his occupation, to his physical well being. That is the essential and the ground work on which all our Industrial Hygiene must be built. Not merely the introduction of systems of physical examination by industries but their proper utilization in regard to the proper placement of men so as to get the most value out of the physical examination. Dr. Selby, some time ago, gave me an example of his own experience that illustrates this point:

A firm had installed a system of physical examination, and had followed it up for two or three years, at a cost of several thousand dollars. They had cards of various colors, all nicely filed and indexed; and they had come to the conclusion that the examinations were not doing them any good and so prepared to abandon them. They had put into motion the machinery of physical examination, but had not utilized the information gained therefrom for the proper placing of the men examined without which the physical examinations were largely valueless.

The second point that I wish to call to your attention, as the result of our experience during the past year, is the necessity of determining upon means for extending medical and surgical service to the smaller employers of labor, the man the size of whose plant and whose finances do not permit of the establishing of the elaborate medical service that the large employers of labor are able to give to their employees. I will not dwell on that at any length. It is a subject that is to be discussed rather fully next Wednesday and Friday, at the meeting of which Dr. Mock has told you, at which, no doubt, you will be present. There is a tendency to the formation of what we may call industrial public health clinics, which will afford the workers of the neighborhood a chance of getting a physical examination and a thorough diagnosis. There is much debate as to whether that service should pay or be free and whether it should be run by private individuals or by the municipality. I do not think that a hard and fast line should be laid down. The needs differ in various localities. They are trying to put such a scheme on foot in Newark, N. J., and the local opinion seems to be that it should be a private enterprise with a small fee, the overhead to be carried by the various industries in the locality. In debating this point of affording medical and diagnostic service to small firms and others, and as to whether it shall be municipal or private, and whether pay or free, the fact must not be lost sight of that if we are going to put that service over and make it stick, we must look at it from the workers' point of view. My experience so far, in the various meetings that I have attended, and which have also been attended by labor officials, was that the average laboring man prefers service for a small fee. That may not be true throughout the country at large—the Middle West or the West; but in the Eastern points, where I have been—the industrial centers—as far as the laboring man is concerned, the sentiment seems to be in favor of diagnostic clinics run by private parties, incorporated as such, with a small fee—say, fifty or seventy-five cents a visit. What the further development is going to be, I do not suppose any of us can foretell now; but in any locality where any such scheme is put on foot, if it is going to be successful, the point of view of the laboring man must not be lost sight of.

The third thing is the necessity of encouraging the education and development of the industrial public health nurse. If nothing unforeseen happens, the Public Health Service expects to inaugurate in Washington shortly a course of instruction for public-health nurses, for graduate nurses, with particular reference to industrial nursing. I think that there is, perhaps, no more important point, aside from physical examinations, in the whole scheme of industrial hygiene, than in affording proper facilities for the education of industrial nurses.

With these few points to which I should like particularly to call your attention, and on which I should like particularly to have your opinion, I will conclude.

Dr. Mock: The question of physical examinations did not appear in this meeting or the last, to any great extent. Today, one of the men asked me whether physical examination of employees had proved a failure and had been dropped and whether we were ashamed of it and were keeping quiet on the subject. The only man that I know who is ashamed of it is the printer, who left off the program of this meeting one of our most important papers —Physical Examination, by Dr. C. D. Selby, Toledo, Ohio. Before we have the discussion on Dr. Lanza's paper, we will hear from Dr. Selby, and then discuss the two papers together.

PHYSICAL EXAMINATION

Dr. C. D. Selby, Toledo, O.: I am a firm believer in the physical examination of applicants for employment, a firm believer in the physical examination of employees on all occasions that offer; because it is evident that we, as industrial physicians, as administrators of the health of industrial workers, cannot intelligently advise them unless we have the facts as they exist. I defy you to obtain the facts without examinaion.

When I was requested by the U. S. Public Health Service to make a study of the medical and surgical methods of examining industrial workers at the time that we went into the war, I was astounded to discover that the physical examination as a means of determining fitness for work has been discontinued in plants that were busy in manufacturing munitions and war supplies. It seemed to me that if there ever was a time when they should assist in conserving man power, it was at that time; and the fact that they had discontinued physical examinations aroused in me the feeling that we, as industrial physicians, had not lived up to our duty. In many instances, it was due to the fact that the physicians had not utilized the information secured through the examination. Evidently the medical profession realized the necessity of making examinations, and knew in theory what it could do with the information; but when it came to practical application, it had no knowledge of what we could do with this information. We had no knowledge of the plants. We took care of the men; but when it came to using the information for the vocational placement of men, we were utter failures. There were few instances in the United States of physicians who knew intelligently how to place men in jobs. I know of only one instance in which that was done scientifically: At the American Thread Company, of Holyoke, Mass., by Dr. W. J. Curry. I think it would be well if he could give us information as to the scheme he worked out—on the one side, the men; and on the other, the finances.

The information that the doctor secures is essential; and the first thing that he must learn is the vocational requirements of his plant. He cannot do that by sitting in his office and taking care of injuries.

In discussing Dr. Lanza's paper I want to emphasize this one thing: the necessity of working out the physical examination for the conservation of the health of the worker. That is a most important thing.

The second question that he brought up, which relates to the medical service for industrial workers in small plants, is another important point. In Toledo, we have 45,000 working people, of which 20,000 are working in plants in which medical service is provided. That leaves 25,000, or over one-half of the total number, who work where no medical service is provided. The employees are privileged to go to their family physicians, when injured. I attended a meeting of the Industrial Commission of Ohio at which they discussed the advisability of making a ruling that would compel employers who have a well established medical department and compensate directly from their funds, to permit their employees to go to their own family physicians, to permit men of employers who pay into the State funds to seek their own family physicians. The contention was that all employees should be permitted to go to their own family physicians when injured. The commission frankly confessed that better service was given in the plants where medical service was provided and made compulsory than was given to the employees of those plants in which the men were allowed to seek service from their family physicians. The small industrial establishment is unable to maintain a medical department of its own. Large establishments can do so, as we realize —because we are, for the most part, engaged with the large establishments; but the smaller establishments create the serious problem in Industrial Medicine today, if the same proportion exists in the United States as in Toledo—five-eighths or more of the industrial workers receive service from what you might call untrained physicians, untrained in the application of their knowledge to industrial needs.

I need not dwell on the shortcomings of ordinary medical training for the practice of Industrial Medicine. The fact that a man is a doctor does not make him qualified to practice medicine in the industries. The family doctor, who may be an expert obstetrician or pediatrist, is not qualified to take care of industrial injuries. The incapacities are more serious and more permanent therefore in the small plant; and the employees do not have the advantage of the excellent work developed under the leadership of Dr. Schereschewsky, Dr. Lanza and Dr. Alice Hamilton.

The problem is a serious one. I do not know how you can solve it; but it is one well worthy of consideration by this Association, and of the support of the National Government.

The third point that Dr. Lanza brought out is the training of nurses. That is as important as the training of physicians. The fact that the nurse is a graduate of a Class "A" hospital does not make her fit for serving in an industrial establishment. In Toledo certain hospitals have their graduates go into plants and secure short periods of experience in our dispensaries. This enables us to test the qualifications of these young women for industrial service and, when we need nurses, to call upon those that we have passed upon and consider qualified.

Now, gentlemen, I am going to speak frankly. I was attached to the U. S. Public Health Service during the war, and had the experience of being associated with Dr. Scherschewsky and Dr. Lanza in the development of the Division of Industrial Hygiene. It seemed to me wonderful to build up something that would last as long as labor was necessary, and that would contribute to the workers' health and peace of mind and to their industrial efficiency. We, (speaking collectively), labored to create this Division, and made progress. The demand for its service was tremendous. We could not meet it, no matter how much funds we had, for the demand was rapidly spreading. There is a reason for that. Industry realized that something must be done to stabilize labor and relieve the feeling of unrest among the working people. A most serious problem is this instability of labor, and the manufacturer is groping for something to relieve it.

Every suggestion offered, he grasps, in the hope that in it he has found the remedy. Industrial Medicine he recognized as one of the branches of the science of industrial management. If there ever was a time when this movement was needed, it is now. If it was needed during the war, it is doubly required today, because of the unstable condition of labor; because many of our working people are leaving as rapidly as they can get passports, to go to their old homes. I regret that Congress, in its wisdom, saw fit to cut off the appropriation for the Division of Hygiene and Medicine. The Public Health Service is left in an impaired condition; and this wonderful work will practically terminate, unless something is done in the way of securing an appropriation.

Now, gentlemen, this is the most important body of industrial physicians in the United States. We have an obligation to society, to industrial workers, to industry, and to the medical profession. It is our business to see that the United States Government perpetuates the work of conserving industrial man power. I have no remedy to suggest. We could pass resolutions to be sent to Congress, urging the necessity of appropriating sufficient funds to carry on this work on an enlarged scale. I do not know what effect it would have. Dr. Patterson is smiling. He has an idea. He says, "We will go to the manufacturers of Pennsylvania. They can put this thing across." I believe the manufacturers of the United States can do it. We have influence with them and with other employers, and it is our duty to urge them to take prompt action. Otherwise, this wonderful work will fall by the wayside.

Dr. W. J. Curry, Holyoke, Mass.: The use of the physical examination as a means of determining the fitness of an individual for employment has become rather wide spread during the past few years. It has been a noticeable fact that in a large number of factories there is a lack of familiarity on the part of the physician performing the physical examinations with the actual occupational duties in his plant. In order to make proper use of the physical examination of applicants for employment which no one will say is not of advantage to both the employer and the employee, it is vitally necessary that the physician be acquainted with working conditions in his plant and that he has an intelligent understanding of the duties, hazards, etc., of each particular occupation in the establishment. Unless this is so he is put in the position of a person testing material and not knowing to what use this material is to be put. It is a very hard proposition for a physician who has had little or no technical training and a very small amount of conception of the actual operation of machinery in an Industrial establishment and the duties performed by an operator. To offset this lack of knowledge is a comparatively easy matter.

Upon the commencement of a program of physical examination of applicants for employment in this concern, I found I was handicapped in this manner. There are in each establishment a vast number of operations of an entirely different nature, requiring different types of individuals to perform them in a satisfactory manner. We started at the beginning of our process and took each operation through to the shipping of the finished goods from our mills. In each operation we endeavored to establish a standard set of qualifications for an employee for this operation, that would as nearly as possible represent the ideal individual for that position.

Our standards as formulated comprise an ideal employee for that particular operation from the standpoint of the foreman and the physician. Standards were established as to age, height, weight, hearing, mentality, temperament and dexterity and at the same time a listing was made of unusual working conditions in this particular department. These are shown in the following table: A. For convenience in charting certain sets, requirements were classed as A; for others below them as B; and still others as C. This simplified the codification of these things and allowed us to tabulate it in a more convenient manner. The key explaining the charting being as follows:

Height	Weight	Sight	Hearing
Male 67′ or above Female 63′ or above	Male 150 lbs. Upward Female 130 lbs. Upward	20/20 both eyes without correction	Normal at 20 ft. (Both.)
Male 62′-67′ Female 58′-62′	Male 135-150 Female 120-135	20/30 one or both corrected	Normal at 10 ft. (Both.)
Male Under 62′ Female Under 58′	Male Under 135 Female Under 120	20/30 or less. Not corrected	10 ft. or less. One or both.

Dexterity	Mentality	Temperament	Lifting
Marked Dexterity	Complete elementary education or better	No sign of tremor or nervousness	Heavy
Normal ability to use hands	Anything less than A.	Anything below A. and normal	Moderate
Any indication of clumsiness	Illiterate	Marked tremor or history of chorea	Slight or None.

Dept.	Age	Height	Weight	Sight	Hearing	Dexterity	Mentality	Temperament	Lifting	Working Conditions
I	20-40	A&B	A&B	B	B	C	C	C	Yes	Fairly Dusty
II	20-40	A&B	A&B	A&B	B	C	B	C	Yes	Fairly Dusty
III	18-45	A	A	A&B	B	C	C+	B+	No	Very Dusty
IV	18-45	A&B	A&B	B	B	C	C+	B+	Yes	Slightly Dusty
V	18-45	A	A	B	B	C	C+	B+	Yes	Slightly Dusty
VI	18-45	A	A	B	B	C	C+—	B+—	No	Slightly Dusty
VII	18-40	B	B	B	B	C	C+—	B+—	Yes	Slightly Dusty
VIII	18-40	C	C	B	B	C	C+—	B+	Yes	Slightly Dusty
IX	18-45	C	C	B	B	B	B	B+	Yes	Slightly Dusty
X	18-30	C	C	B	B	A	B	B+	No	Average
XI	18-30	C	C	B&C	B	B	A	B+—	No	Good
XII	18-30	C	C	B&C	B	A	B	B+	No	Humidity
XIII	18-40	B&C	B	A&B	B	A	B	A	No	Good
XIV	18-30	B	B	A&B	A	A	A	A	No	Good (Sitting)
XV	20-40	A	A	A	B	B	B	B	Yes	Very wet
XVI	18-30	B	B	A	B	A	A	A	No	Good
XVII	16-30	B	B	A	A	A	A	A	No	Good
XVIII	20-40	A	A	A	A	A	A	A	No	Very wet
XIX	16-30	C	C	A	A	A	A	A	No	Good

I have found this to be of value to me in my work. The compilation of this afforded me an opportunity to familiarize myself with the different types of machinery and different operations in the plant in a way easier perhaps than would have occurred otherwise, and enables me to recommend the individuals I find unfitted for the work they are originally hired to perform, for some other type of work where they will not constitute a hazard either to themselves or the concern.

This system has been in use two years, has proved satisfactory to us and we have extended its use to other mills of our concern located in different sections of New England and where the employment situation is entirely different.

In connection with this work we have abandoned our old type physical examination card and are using a card we call a personal card in its place which is laid out as follows:

A numbered column is used each time an employee is examined thus giving a chance for five different periods of employment, on the reverse side is a record of the employment history of the individual. In filling out these cards I note the weight in pounds, the height in inches, and use the symbols A, B, C for the remainder of the headings on the left side of card representing the same things as on the key to the "standards of employment" chart. On the right side of this card I check each heading and if there is anything in my examination worthy of note, it is placed under remarks.

While this may be too crude for some Medical Departments, so far it has filled our needs here and has given satisfaction.

Dr. Royal Meeker, Washington, D. C.: I have very little to say about the topic before you further than that it seems to be an axiom that there should be a national health program, and that appropriations sufficient to carry out that program should be voted by Congress and by the various states. It really matters not whether the Congress decides to continue the Working Conditions Service in the Department of Labor or not. The Department has full authority, of course, to co-operate with the Public Health Service in carrying out a program agreed upon.

One feature of that program that is necessary, it seems to me, has not been touched upon by any of the speakers. At least, if it was, it got by me. That is, the necessity, in this program, to provide a very prominent place for the State Health Officials. Under our peculiar form of government, the states, for the most part, have all police powers or powers connected with the regulation of industries carried on in the states. It seems to me vital, then, to a program of this kind that there should be co-operation, not merely between the Federal agencies, the Public Health Service and the Department of Labor, but also between these and the State Health Authorities.

Now I chance to be the Secretary of the International Association of Industrial Accident Boards and Commissions. I guess I shall have this position as a life-long job. These commissions are official bodies. The International Association is a quasi-official association of these official bodies. The Workmen's Compensation Laws—and there are now 42 States that have such laws—have been discussed; and considerable improvement in them has resulted from the meetings and deliberations of this body. The administration of these laws has been unified and co-ordinated.

Now I think that I shall spring this upon the Commissions at their next meeting. There needs to be much more uniformity in this compensation legislation. I do not think that any of you would advocate a uniform compensation law, to be put into effect all over the United States because industrial conditions vary too much from locality to locality. But we need more uniformity than we have. For example, a man who is injured in New York State will, under the New York Compensation Law, receive a much higher compensation than he would if injured just across the line, in Connecticut, or if injured just over the river, in New Jersey. There is a degree of difference that is absolutely inexcusable, and I am going to propose a certain set of minimum requirements that should go into every compensation law; and one of these is that every commission must have a medical adviser. It is absolutely essential. It is perfectly asinine for any commission of lawyers to attempt to pass upon medical questions, or even to pass upon the question as to what kind of physician is needed by the injured employee that comes before the commission for compensation; and yet, in the majority of the 42 States, we have no medical adviser on the commission. They are going it blind. They do not know where they will bring up, but I know.

There are a whole lot of things that I should like to say about them. I am going to put in, also, as a main requirement, that every compensation commission shall be provided with an efficient statistical bureau. We have been operating under the compensation laws for a number of years, but we have almost no compensation statistics. Some States publish compensation figures, but no statistics to speak of. There is a great difference between figures and statistics. I find that physicians are the greatest figurers in the world, but are not good statisticians. You industrial surgeons know how essential medical statistics are.

While I am speaking of statistics, I may say that it seems to be quite the fashion for alleged statisticians (and those who are not even alleged statisticians) to get up and take a crack at statistics, and to apologize for them because they are dry. Some statistics are dry, and some surgeons are dryer than any statistics that I have had anything to do with. Some rivers are dry, and I have dug fish out of the beds of dried rivers. You think I am lying, but I am not. Some statistics are dry, because the subject matter is so Sahara-like.

What are statistics? Many definitions have been given. They have been called the science of counting. That is not correct. Figures are not statistics. Statistics are a means of presenting mass data. It depends on the subject, whether they are dry or not. No body of surgeons can operate successfully without statistical information, to tell them whither they are tending and whither they should tend.

It seems to me to be an absolute minimum requirement that every compensation commission should have a competent medical adviser and an equally competent statistican, so that they may know where they are and the direction they are going, in the administration of the law. What in the world is compensation but a medical-statistical question? That comprises the whole matter. The lawyer has, or should have, nothing to do with it. Unfortunately, the ambulance-chasing lawyer (I suppose there are no lawyers present, so I speak with the utmost freedom) is getting his fingers in the compensation laws, as he did in the Employers' Liability Law. I should make this talk to the accident boards. It is they who should hear it, not you.

The next Conference of the Accident Boards and Commissions will be held at Toronto, next September; I think, the 23rd to the 25th. Some of the subjects that we, or rather the medical men connected with the Compensation law, shall wrestle with are some of the questions that interested you, I understand, this morning. That perennial "Banquo's ghost," Hernia, will come up for discussion. That is the thing that the medical men practicing under the Compensation Law have most trouble with, and that will be one of the subjects brought up at the Conference. In regard to such subjects as Hernia, Back Strain, Heart Disease, etc., the compensation view is frequently somewhat different from the industrial physician and surgeon's view. I hope that there are not many of the old type plant physicians here. I hope there are none. You know what I mean. I wish you would come to Toronto and give your advice. I am sure it would help the Commissions and their medical advisers, and I am sure that the men who have been struggling with compensation questions can do you a whole lot of good. I think that here is a chance for the fulfillment of the perfect economic exchange. You know the economic view of exchange is not the commercial view of exchange, the latter being that one exchanger gains and the other loses; but the economic view is that both parties gain. I am sure that both parties would gain, and gain a great deal.

Now it is absolutely necessary that industrial physicians and surgeons familiarize themselves with the Compensation Laws of their various States. Otherwise, you will be working in the dark. If you have not informed yourself of the reading and interpretation and administrative practices under your laws, it is your duty to go home and inform yourself as soon as you can. I hope that you can come to the Conference and do us good, and we will do you as much good as we possibly can.

BACK STRAIN—AN ACCIDENT OR A DISEASE?

Robert B. Osgood, M.D.
Lieut. Col., M. C., U. S. A., Instructor in Surgery and in Orthopedic Surgery, Harvard Medical School

The specialty I represent appreciates deeply, gentlemen, the opportunity of participating in your scientific sessions. Orthopedic surgeons serving with the A. E. F. were trusted with the working out of certain problems. These problems, roughly speaking, were the lesions of the extremities and spinal column, both pre-combat and post-combat. Greatly helped by this experience, the specialty is eager to be of more service in peace, convinced that there is no essential difference between certain static and traumatic conditions of civil life and the lesions of the extremities and spinal column which result from pre-combat and combat army life. Perhaps the majority of these lesions in civil life are the results of industrial conditions and industrial accidents. No symptoms are more common, none are less intelligently treated, than those grouped under the term of "Back Strain." You have given me a subject in the form of a question. I do not believe the question can be answered simply, but in the time allotted an attempt will be made to indicate the lines along which the analysis of any given case must proceed and to demonstrate some of the factors which contribute to the complexity of the solution. We shall discuss, briefly, the so-called static conditions which are known to give rise to the symptoms of back strain. Then by means of lantern slides we shall show you a few of the common and more typical lesions and try to emphasize the fact that combinations of structural abnormalities with static or traumatic strains are frequently found. We shall suggest that the complete relief of these symptoms is often accomplished only by appreciating that the recent and perhaps trivial strain may be superimposed upon a structural defect, which up to the time of the accident had been unsuspected and unfelt.

I. Static Conditions

Under this heading we shall group the symptoms that may occur as the result of:

(a) Faulty posture acquired probably in childhood and accentuated in adult life.

(b) Faulty positions in which work is done.

(c) The combination of some pelvic disease, vertebral abnormality or acute strain with faulty posture or a faulty position of work.

(a) Faulty Posture.

These postures mean faulty mechanics for the erect position and a lessened resistance which results in fatigue amounting at times to acute strain. We must not forget also, that foot-strain often gives rise to back pain as the back muscles attempt to accommodate.

(b) Faulty Positions of Work.

The tiring effort of the neck and lower back muscles to assist a poor ocular focus is familiar to the ophthalmologist; the stenographer's chair which offers no support to the back, the low desk of the draftsman or the low bench of the workman; the cramped positions of miners in the low galleries may serve as examples of occupational back strain and need no comment.

(c) The obscure occupational backs are those which fail to completely recover when postural strain is relieved by supports, by the correction of vision, or by correcting conditions of work. Rest surely relieves, but symptoms recur and we must look for combinations or for complications of pelvic or prostatic disease, arthritis or congenital abnormalities.

It has long been recognized that sciatica is less definite a diagnosis than rheumatism, and in nearly all low-back lesions, it is a common symptom and usually only a symptom. It may be associated with tenderness along the course of the nerve or portions of the nerve. Almost never in a so-called sciatica do we find the muscular weakness which accompanies a true neuritis. In our opinion, a true localized neuritis of the sciatic nerve is as rare as that of the other main trunks.

II. Congenital Abnormalities

Until Böhm and Goldthwait focused attention on the extreme frequency of the congenital abnormalities of the low spine, we had been recognizing only the gross lesions of wedge shaped vertebra or a marked spina bifida or an occasional cervical rib. Since we have been scrutinizing the X-rays of lumbar spines and sacroiliac joints we find it rather difficult to determine a standard for the normal in this region, so varied in shape are the elements. Reviewing hundreds of plates taken in the Massachusetts General Hospital for all sorts of conditions, including suspected kidney, bladder, pelvic and prostatic lesions, less than half could be said to show completely normal bony outlines, even using the term with generous latitude.

Many of us here present would show these abnormalities and it is to be hoped we will remain in ignorance of their existence. Some of them are sources of strength rather than weakness, but once an accident occurs which produces a strain, we must be sure that their existence does not complicate the lesion or call for a mechanical treatment which must take cognizance of them and may differ from the mechanical treatment indicated in a so-called normal case.

III. ACCIDENTS

(a) Simple muscular or ligamentous strain.

Muscular strain is probably the commonest industrial lesion. Recovery is usually quick under simple rest, whether or not this rest is accompanied by the use of the well-advertised liniments to which the recovery is usually ascribed. Sometimes the symptoms from these traumatic lesions are persistent. A direct blow may seriously damage muscle fibres or a hematoma may leave unusually strong adhesions after it has been organized. A rupture of a few fibres of an origin or insertion to a spinous or transverse process, or of the attachment of the lumbar aponeurosis to the sacrum or iliac crest, may continue to be a painful or irritating spot, analagous to the discouraging tennis elbows and golfers' wrists of civil life. Complete immobilization for six weeks, followed by a gradual but persistent use, is often the shortest road to recovery in back lesions of this sort, as it is in tennis elbows.

(b) A true sprain of the strong vertebral interspinous or articular ligaments or a tear of a portion of the lumbar aponeurosis is more rare and more serious. These lesions are sharply localized and require efficient immobilization. The lumbo-sacral and sacro-iliac ligaments seem to be subject to strain, to which they yield more commonly than the others. Cases are on record of the rupture of the intervertebral disc with the protrusion of the corpus spongiosum causing an actual pressure on the cauda equina. This must be extremely rare.

Sciatica is again a very frequent symptom of these lesions, especially of the lumbo-sacral and sacro-iliac group.

(c) Ligamentous rupture or relaxation associated with displacement.

Slight displacements.—We must admit, I believe, the existence of vertebral displacements or mal-alignments, sometimes demonstrable by the X-rays and sometimes not. I am personally in doubt whether these displacements are connected with the symptoms as cause or as effects. The frequent marked and symptomless mal-alignments of scoliosis suggest that they are usually the effect.

Nothing can persuade our friends of the osteopathic school, that the true cause is not the slight displacements which they honestly believe they can palpate and correct by repeated manipulations. The fact that the symptoms frequently disappear under their treatment is proof enough to them. However, after an entirely honest and fairly thorough attempt, sympathetically aided by some of their best practitioners, I have been unable to satisfy myself of this causal relation, nor have I been able to prove conclusively the existence of the displacements which they were certain they could palpate.

Spondylolisthesis.—The relaxed lumbar spine, lumbo-sacral or sacral-iliac joints, pivotal as these structures are in the erect biped, may quite as well give symptoms as relaxed knee joints or relaxed feet. It is a question of the strength of the supporting muscles. The contortionist as a rule is free from back strain. If one or two structures in a joint mechanism are weak while the others are strong, we shall surely have symptoms. The typical example of this is in the lumbo-sacral joint, with the thrust of the body weight even tending to push the fifth lumbar forward in front of the sacrum. We do well, however, to remind ourselves of Sir Arbuthnot Lane's comment on the scholarly monograph of Neugebauer on spondylolisthesis, reporting a comparatively small number of supposedly unique specimens. Lane said "Every coal heaver I ever dissected had spondylolisthesis." The lesion is not difficult to detect. In backs with poor musculature, it is a cause of constant or recurring discomfort, and it is not easy to relieve speedily without a fixative operation on the spine.

Sacro-iliac lesions.—Although I admit without regret that I was a partner in what I believe was a sort of a rediscovery of displacements and relaxations of the sacro-iliac joint as a common cause of back strain, no one regrets more than Colonel Goldthwait and I the carelessness with which the diagnosis of "sacro-iliac disease" is made today. It does, of course, exist—tuberculosis, chronic arthritis, malignant disease—but it is no entity and as the term is being used, it means nothing. That the normal joint has motion in it, can be demonstrated by dissection or by stereoscopic X-rays. That the amount of motion is variable in different individuals is a fact also. That lack of normal motion is often quite as likely to give symptoms as hypermobility is probably true. Actual displacements, slight and considerable, do occur. Many of them are reducible in their early stages by forcible manipulation at one sitting with or without an anaesthetic, or by repeated less strenuous active or passive movements. Old, irreducible displacements often become symptomless. If a sacro-iliac joint is to be protected, an accurate knowledge of its anatomy is necessary. Lateral pressure on the iliac crests springs it apart. The Italian laborer, when he digs, shifts his belt from the waist line to the level included between his trochanters and his anterior superior spines. He has learned his anatomy, if not the nomenclature, from his symptoms.

Sciatic scoliosis is a term almost as non-descriptive of the cause as sacro-iliac disease. Various lesions of the muscles, of the lumbosacral and sacro-iliac joints may give rise to the phenomenon. Most of the literature under this heading is German and the best discussion of the symptom-complex and its varied treatment in English, is by Bucholz, writing from the clinic of the Massachusetts General Hospital.

Sciatic pain again in all these lesions is a frequent precursor of the diagnosis, a concomitant of the recognized lesion or a persistent sequela of the reduced displacement.

(d) Fractures.

(1) Fractures of the vertebral processes and articular facets, or of the transverse or spinous processes are not as uncommon as is their diagnosis without the X-ray. Fracture of an articular process or processes frequently leaves a region of rigidity and may give pressure symptoms from the accompanying effusion. Fractures of the transverse or spinous processes recover if immobilized, but often remain un-united and painful if not recognized and not treated.

(2) Fractures of the bodies are also much more common than we have believed and the typical slight compression fracture of the spongy vertebrae which firmly impacts is surprisingly devoid of early symptoms. Their significance lies in the subsequently stiffened area and in the tendency to slow over-production of bone which frequently takes place as the result of unprotected activity. This so-called Verneuil's disease may produce an irritative myelitis whose onset may be months or even years after the original trauma. By early and rather prolonged immobilization the danger is often escaped. Operative immobilization of the area may well be the safest treatment in the laboring man.

(3) A word should be said here again concerning the importance of recognizing the existence of a congenital abnormality or an acquired disease in connection with the traumatic lesion. Different leverages are frequently produced and adjustments of the weight-bearing mechanism and muscular action are necessary. This new condition, plus the old lesion, requires nice appreciation of the mechanics, if relief from weakness and pain is to be obtained.

IV. Disease

(a) Lumbago. We will leave the acute myostis, which perhaps alone ought to be allowed this name, to the internists. The name is perhaps not as frequently misused as sciatica, but its abuse is still a reproach.

(b) Non-tubercular arthritis of the spine is of various types. Acute infectious arthritis sometimes accompanies a Neisser infection or a typhoid. We see, not infrequently, the chronic poker backs of the so-called Strümpel-Marie or rhizomyelitic type, in which the articular processes first ankylose and the spine and root joints of the shoulder and hip become fixed by bony union.

More common by far in persons beyond middle age, is the hypertrophic type with beak-like processes starting from the edges of the bodies of the vertebrae and involving frequently the articular processes and sacro-iliac joints. It frequently gives rise to few symptoms other than diminished flexibility, though it rarely produces complete ankylosis.

(c) Tuberculosis in the form of Pott's disease is far less easily diagnosed in the adult than in the child. Our own failures to make the diagnosis have, we trust, led us to be very wary. There is often no kyphos and there are often few typical symptoms. The lesion and the surrounding abscess shadow are discovered at times only by the X-ray. When a disease attacks the sacro-iliac joints, it is often most misleading and with our present greater familiarity with non-tuberculosis lesions of these joints, we are often likely to forget the very real possibility of these more serious conditions.

Under appropriate rest by recumbency and mechanical or operative measures, tuberculosis of the sacro-iliac joints is by no means always fatal, and recovery is frequently extremely satisfactory. The seemingly healed tuberculous lesion is not unlikely to have exacerbations for many years following any slight trauma. Painter's paper on the malignancy of bone tuberculosis has a distinct bearing on the prognosis, especially in its relation to industrial conditions.

(d) Syphilis of the spine is either much less commonly recognized in certain sections of the country than in others, or is actually in these sections less common. It is a frequent diagnosis on the Pacific Coast and a rare one on the Atlantic. Congenital syphilis, as well as acquired, is difficult without the Wassermann test to differentiate from tuberculosis, but its response to treatment, of course, is quite different. Tabetic lesions of the vertebrae have long been recognized. They are not common, but they should not be forgotten.

(e) Osteomyelitis is usually acute in its onset, and its outcome depends upon whether the bodies or the articular processes and the laminae are the seat of the infection. If the disease is in the bodies, the abscess frequently ruptures anteriorly, infects the viscera and is fatal. In the processes or laminae the disease may be drained posteriorly.

(f) Neoplasms must be mentioned in connection with back strain, and especially with relation to sciatic pain. Bilateral sciatic pain is rare in static and traumatic strain. It is common in spinal cord tumors and malignant disease of the bones. Epithelioma of the bones always represents a metastasis. The extreme punctate atrophy of a chronic tuberculosis may be mistaken for myelomata. Small, round-celled sarcoma, we have personally seen very rarely, if ever, in the spine. We have seen occasionally a giant cell sarcoma or as it has been recently called, hemorrhagic osteomyelitis.

(g) Under this heading of disease we must mention the group of so-called functional or hysterical backs. In the absence of fairly definite stigmata this diagnosis should rarely be made. Railroad spines may have occurred as a result of railroad accidents, but the name is not descriptive of a typical picture. The diagnosis of functional spine is almost as rarely justifiable as neurasthenia.

SUMMARY

To answer the question of the title "Back Strain—An Accident or Disease?" we may say either or neither or both. Having been paid our patients' or our companies' money, we must make our choice. The choice may today be based on knowledge and not on surmise. We must approach the choice without preconceived notions. We must refuse to consider our duty done when we make a diagnosis of lumbago or sciatica or back strain, or I regret to say, nowadays, of sacro-iliac disease or railroad spine.

Unless we make the most careful examination and unless we employ the most accurate diagnostic methods we shall continue to be puzzled by the persistence of the symptoms and our patients will continue to seek and often obtain osteopathic, chiropractic and nostrum relief. We must know why and when and how to protect, and why and when and how to exercise. Forcible manipulation is not without danger nor is a back brace a panacea.

I trust, gentlemen, I have left the sense of confusion in your minds. Until we sense this confusion we cannot begin to be clearheaded. But there must be a way out of our confusion and it is necessary that we find it. The considerations we have merely suggested seem to us the necessary first steps toward our emergency.

I want to leave with you this: That the diagnosis of hysterical spine should rarely be made; that the diagnosis of railroad spine means nothing; that the diagnosis of functional spine is usually a confession of our ignorance of the true cause of the trouble. My experience in medico-legal cases is not extensive, but it is large enough to have made me blush for the surgeon who contents himself with the diagnosis of sciatica or lumbago or functional spine, the nature of which neither the patient, the jury, nor the surgeon himself can understand. On the other hand, the plaintiff's lawyer or physician may demonstrate clearly by X-rays the separation of the sacro-iliac joints or the displacement, and secure his verdict by proving to the uninitiated jury his contention. *We* may know that the separation he points out is entirely within normal limits. *We* may know that it has probably nothing to do with the symptoms. *We* may know that the displacement he demonstrates is due to the asymmetry of the X-ray tube and not to the asymmetry of the patient, but *we* should be the first to demonstrate these facts. Only the careful analysis of each case and the knowledge of the normal and the commonly symptomless variations will allow us to do so. We shall advance neither the interest of science nor of our patients nor of the companies we represent until we take time to analyze thus our cases of back strain.

CONSERVATION OF THE VISION OF THE INDUSTRIAL WORKER

By William W. Blair, M.D., Pittsburgh, Pa.

The broad general subject of the Prevention of Blindness presents so many aspects and leads into such widely scattered fields of medicine and sociology that it is quite hopeless to attempt a full exposition of the topic within the limits of a single paper.

I am glad to attempt to bring to your consideration some thoughts on Sight Saving which come under a single phase of the subject; namely, the *Conservation of the Vision of the Industrial Worker.*

It is a striking fact that whoever has spent any considerable amount of time in the care of those suffering from accidents involving injuries to the eyes has not been able to escape the impression that the great majority of these accidents might have been prevented.

This feeling remained an impression until, with the development of Workingmen's Compensation Laws in various states and the growth of the Safety First idea everywhere, figures have accumulated which has served to bring the whole matter into the realm of fact.

The established outstanding fact being that practically every eye casualty is to be looked upon as a preventable one, the problem then which we have to face is to provide some practical means of preventing its recurrence.

It is quite unnecessary to dwell here upon either the economic or humanitarian phases of the matter; so much may be safely assumed without question: *first* that practically all eye accidents are unnecessary and *second* that the prevention of such accidents pays.

Ample figures in support of both of these assertions are available but I will not burden you with them here.

As partly indicative of the scope of the problem it may be said that according to figures collected from reliable sources it appears that there occur not less than 200,000 eye accidents in this country each year; also from reports collected from the reports of the United States Bureau of Census, which Bureau has collected many interesting facts concerning the blind, there are more than 15,000 blind persons in the country who owe their misfortune to accidental injury.

What this means in loss of output on the side of the employer and loss of wages on that of the employee can only be conjectured.

The problem of the prevention of injury to the head and eyes among Industrial Workers presents many phases, and it is only by a careful consideration of the various aspects of the question that an intelligent conception of the same can be obtained.

To those of you who are gathered here it may be helpful to present a brief review of the progress of prevention, the scope of the work and an analysis of some of the difficulties involved with some suggestions as to the development of methods.

Primarily it must be admitted that in this intensely mechanical age the eyes of those engaged in the various occupations must be subject to a more or less constant risk; that a certain amount of danger attends many of the mechanical operations upon which the progress of the world depends; these dangers are inseparable from certain vital processes, but it is encouraging to learn that such perils can be largely mitigated and even entirely eliminated by the exercise of certain precautionary measures.

The development and elaboration of said precautionary safeguards have been the outgrowth of a number of factors working together, and in this is an element of strength for the entire movement, for where the several interests involved have seen the wisdom of the campaign for safety the results are sure to be more promptly achieved.

In a proposed standard for the protection of the head and eyes of industrial employees as drawn up by the Division of Industrial Hygiene and Engineering of the Department of Labor and Industry of Pennsylvania the various eye hazards are recognized by the division into nine groups as follows:

Type A. Processes where protection from flying objects is required.

Examples of these processes are chipping, caulking and riveting.

Type B. Processes where protection from splashing metal is required.

Examples of these processes are babbitting, pouring of lead joints in cast-iron pipe, and pouring of hot metal where there is a possibility of water being present.

Type C. Processes where protection from dust and light flying particles is required in shop work.

Examples of these processes are scaling and grinding.

Type D. Processes where protection from gases, fumes, and liquids is required.

Examples of these processes are handling of acids and caustics, working in or around places where nitrous-oxide fumes are likely to be evolved, dipping in galvanizing tanks, and japanning.

Type E. Processes where protection from an excessive amount of dust and light flying particles is required.

An example of this process is sand blasting.

Type F. Processes where the protector will intercept injurious radiant energy and reduce the intensity of the visible radiant energy to a moderate degree.

Examples of these processes are oxy-acetylene and oxy-hydrogen welding and cutting, open-hearth, bessemer and crucible steel manufacture, and furnace work.

Type G. Processes where the protcetor will intercept injurious radiant energy and a large part of the visible radiant energy.

Examples of these processes are electric arc-welding and cutting.

Type H. Operations where protection from dust and wind is required.

An example of this is truck driving.

Type I. Operations where protection is required from reflected light or glare.

Examples of these processes are long exposure to snow-covered highways and exposure to the glare from lights as in the life testing of lamps.

The provisions of the Department of Labor and Industry are shortly to be enacted in legal form in Pennsylvania and here appear our difficulties.

Under the proposed law it is mandatory upon Employers to furnish an approved form of protection while there is no method of compelling the workman to avail himself of the measures provided. This question I will touch upon later.

By far the greatest number of eye injuries result from flying objects and it is in just this class of injury that protection is most difficult to provide.

Coal Mining

Let us take for example the industry of coal mining; in my own community this is an occupation furnishing a large percentage of the eye casualties and little has been attempted in the way of protection.

The Experiment Station of the United States Bureau of Mines located in Pittsburgh has concerned itself for a number of years with the elimination of risks from blasting, the accumulation of dangerous explosives gases and mine dust, foul air, bad lighting, etc., but so far nothing has been done toward the protection of the coal miner's eyes from injury.

It is asserted and it is probably true that the miner actually at work digging coal cannot wear goggles; the light is poor and uncertain, the wearing of goggles hampers his movements in as much as they restrict his field and the lenses themselves quickly become covered with grime and sweat.

In fact mine superintendents feel that for a miner underground to wear goggles would be to expose him to other bodily risks which would outweigh the danger to his eyes.

As a matter of fact, however, the coal miner's eye injury while it is usually caused by a flying object is by no means always encountered while a man is engaged in digging.

There is so much work going on about the mine in the way of construction and repair that ordinary shop rules and provisions should apply, but ordinarily do not, simply from the established tradition that coal miners cannot wear glasses.

To develop this point more fully I might say that the commonest form of eye injury suffered by the coal miner is pneumococal ulceration of the cornea; this infection is always preceded by an abrasion of the corneal epithelium which in turn has been caused by a flying chip of coal, slate or a particle from the face of a hammer or the head of a chisel.

This injury may come to the man whether he is working on the face of the vein or at the pit-mouth in the tool-shop and from the fact that the man cannot wear glasses underground it appears to be assumed that such protection is unnecessary outside, which negligence has cost many a man his eye.

There is certainly great need of a closer application of known methods of protection in this particular industry.

In the absence of ordinary protective measures much can be done to minimize the eye hazards here and in many other industries as well by the routine adoption of more intelligent first aid measures than those usually employed.

We should remember that the cornea when protected by its epithelial layer is impervious to the ordinary pus producing organisms, it is when deprived of its protective covering, as for example when abraded by a flying particle it becomes an excellent culture medium for the growth of whatever bacteria may be brought into contact with it.

All eye injuries, however slight, should have prompt access to a proper first aid station, which station should be in charge of someone with sufficient intelligence to provide a first treatment which should be safe and conservative; the conjunctival sac should be freely flushed with normal saline solution then under proper illumination search should be made for a foreign body, the lids being everted for this purpose.

The offending particle, if such is present, can be readily removed from the conjuctiva by a sterile spud; if lodged in the epithelium of the cornea two instillations of 2% cocaine solution are sufficient to render the area insensitive when the particle can usually be removed with the sterile spud; the eye is again flushed with a sterile normal salt solution, then there should be placed between the lids a generous quantity of bichloride of mercury ointment, the eye is then closed with a firm bandage and kept so for twenty-four hours, at the end of which time the epithelium will have reformed and the eye will be safe.

Of first importance should be the elimination of that very dangerous factor in either mine or mill work, the workingman who is supposed to be possessed of a peculiar skill or knack in removing foreign bodies from the eye; this genius usually operates with the point of a foul pocket knife or a dirty match-stick or toothpick taken from a greasy vest pocket, or with the corner of a soiled handkerchief moistened with saliva.

As a surgical procedure nothing could be more reprehensible yet this is what occurs daily in shops, mills and mines throughout the country.

Particularly to be discouraged is the use of cocaine by the ignorant and untrained, in fact I am sure that the abuse of cocaine has been responsible for the infection of and the loss of many eyes, and wish to emphasize the dangers attendant upon its indiscriminate use.

A number of times I have seen an eye in which the entire cornea has been denuded of epithelium under cocaine, the instrument used being the blade of an ordinary pocket knife.

Where there is reason to suspect that there has been penetration of the globe by the flying particle the condition is of course most serious and should have the highest skilled attention available; the injured man should be sent to a hospital at once where an X-ray examination can be quickly made and the foreign body, if such be present, can be located and removed at the earliest possible moment by the means of an electro-magnet.

It should be kept in mind that early attention in these cases means much, as the surgery of the recent war showed conclusively that the early removal of foreign bodies from the globe gave much better results than where such removal was delayed.

Thus it is of great importance that an eye which has suffered a seemingly slight injury should be examined most carefully with regard to the history of the accident, the tension of the eyeball, the presence or absence of blood in the anterior chamber, the amount of disturbance of vision, all of which are of greater importance than the severity of the pain complained of.

It has frequently been observed that the pain occasioned by a corneal abrasion may be excessive while that following a penetration of the globe, where such penetration has occurred posterior to the ciliary body, has been practically negligible and frequently passes off entirely within a few hours; I mention this simply to emphasize the fact that the amount of pain or discomfort complained of by the individual has little bearing on the determination as to whether a given injury is of a serious nature or not.

Another word of emphasis should be said in support of the practice of having X-ray plates made in every case of even suspected penetration of the globe, as it is often surprising to find how small a particle of metal traveling with almost inconceivable velocity may penetrate the cornea or sclera and lodge within the eyeball; and furthermore it is just such cases of unsuspected retained foreign bodies which are apt to result later on in transferred or sympathetic ophthalmitis.

Mushroomed Tools

A source of constant danger to the man employed in mill, workshop or foundry is the use of tools which have become burred or mushroomed at the edges of the striking surfaces.

In the larger industrial plants it has been recognized that the use of such tools is extremely dangerous in as much as particles are easily dislodged from the crumbling edges of the striking surfaces and may fly in any direction thus exposing to injury not only the man who is using the tools but all those working in his immediate vicinity.

The elimination of this source of danger is simple, the rule being in well regulated plants to have all tools used in striking operations inspected at regular intervals and those found with burred or mushroomed edges are sent to be dressed on a grinding wheel or retired from use until such dressing can be done.

Goggles

Of all the safety devices known none is of as great all round value as properly constructed goggles.

Protective goggles should be provided by the Employer who should see that only the best type are supplied; under no circumstances should the employee be permitted to go to work wearing a cheap pair of glasses which he has perhaps picked up at a department store for a few cents; the best and most approved kind cost but little.

The Department of Labor and Industry of Pennsylvania in its efforts to provide devices of all kinds has given most careful attention to the development of types of eye protection most needed in the various occupations.

Frames, side screens, and lenses are all to be made according to definite specifications and must successfully pass certain strict tests as to tensile strength, rigidity, comfort and general adaptability to the purpose for which they have been designed.

In some localities there has been a prejudice among the workingmen against wearing glasses; sometimes this prejudice is founded upon lack of interest, laziness and a general tendency to take chances; again with some it is even thought that wearing glasses invited disaster through the possibility of the lens being broken and the eye being injured by the broken pieces of glass.

That the latter is not a real danger I am convinced as in 25 years of experience I have seen but one man whose eye was injured through the breaking of his protective glasses, and in this case the breakage was probably due to the fact that the man was in this instance wearing a cheap pair of glasses with which he had provided himself and probably would not have occurred had the glasses he was wearing been of proper construction.

In addition to the wearing of the goggles those men engaged in chipping castings should be further protected by canvas or burlap screens, so placed as to intercept the continuously flying metal.

The above mentioned Department has also carefully designed and specified the construction of masks and headgear for the protection of those engaged in sand-blasting, pouring of molten metals and the welding of metals under high degrees of heat.

For the protection of the eyes against radiant energy such as the intense light and heat the old fashioned cobalt blue glasses should be discarded, and in their stead should be provided goggles armed with special glasses which intercept the rays of shortest wave length (i. e., the ultra violet) as well as the rays of long wave length (i. e., the infra red) which are the heat rays.

Acids, Chemicals and Caustics

These substances or toxic gases, vapors and fumes arising therefrom are met with in many industries such as the manufacture of storage batteries, the aniline dye industry, processes calling for acid baths, dipping in galvanizing tanks.

Some of these substances act directly on the eyes, and protection should be afforded by means of goggles of the eye-cup variety, respirators, and the use of exhaust systems where necessary.

On account of the nature of the acid burn it is difficult to provide a goggle which will furnish absolute safety, so that all measures must be re-enforced by adequate first aid methods.

Wherever men are working with corrosive chemicals an abundance of clean running water should be close at hand so that the eyes can be washed out with water at once—without waiting to get the man to a first aid station.

Eye-burns with caustic soda are best treated by immediate flushing with a 2% solution of acetic acid or a 2% solution of zinc sulphate, as in the acid burns, the treatment should be immediate in order that the chemical shall be neutralized before it has time to attack the tissues.

It would weary you and run far beyond the scope of this paper to attempt to detail the various forms of protecting devices which have been studied and recommended for adoption by the various state authorities having these matters in hand.

It would seem that every contingency had been provided for and yet we know that with the adoption and installation of the numerous devices mentioned the battle is only half won.

All our efforts will be in vain if we are not more successful in the future than we have been in the past in getting the workingman to avail himself of the various methods provided.

A vigorous campaign of education is absolutely necessary if we would not see the movement fail; a campaign which must be more or less continuous.

With the larger industrial concerns it should not be difficult; a set talk illustrated with pictures and lantern slides given by the mill surgeon or welfare worker to the men en masse or in selected small groups is the only way in which the lesson can be taught.

The lesson should be extended to small industries and to this end welfare agencies of various kinds can render valuable assistance.

To summarize my remarks, I wish to place particular emphasis on the following points:

First, while we cannot escape the fact that a certain risk is inevitably attached to certain vital processes in manufacture, it is equally true that nearly all eye casualties occurring in these various trades and occupations are preventable; our task is then to study the history of each accident as it presents itself in order to contrive, as far as may be possible, some practical means of preventing its recurrence.

The second point is suggested by the first, and that is the practical value of insisting that the history taken in each case shall include full details of the man's normal occupation, as well as an account of just what he was doing at the time he was hurt.

It appears to me that this has a very definite value in its bearing on the constructive side of prevention.

A study of the report of the Bureau of the Census, which contains more statistics relative to the blind than any other publication, brings out very clearly how meager are the actual known facts in connection with the Causes of Blindness.

Third, the great importance of enlisting the intelligent cooperation of the working man himself in the efforts which are being made directly in his behalf.

A definite inertia has here to be overcome; an inertia which is made up of ignorance, prejudice and carelessness; all of which can be made to yield to a well planned campaign of education, as indicated above, through the medium of talks, pictures and the personal influence of Welfare Workers and other like Agencies.

Fourth, First Aid: I should like, if possible, to impress upon you all the vital importance of First Aid of the right sort in the cases of eye injury.

Do not allow the injured man to submit his seemingly trifling eye injury to the ministrations of a fellow workman or a pseudo-oculist in the person of a shop foreman. Forbid all clumsy amateur meddling; see these cases as early as possible yourselves and I am sure that many eyes will be saved.

Mercy Hospital Staff Library

DISCUSSION.

Dr. James Bordley, Jr., Baltimore, Md.: I regret to say that I did not know that I was down on the program for the discussion of this paper; but while Dr. Blair was talking, I made some notes of the things that appealed to me as being of the greatest importance for the preservation of the sight of industrial workers. The first thought was that the industrial surgeons themselves and the men who take care of the people in industry must be acquainted with the common causes for the loss of vision; and in order to do that, I think that we could best insure it by adopting the idea of Dr. Geier regarding the establishment of chairs of Industrial Medicine and Surgery in every medical school.

The second thought is the establishment of social service departments in industrial communities. The mere ordering of medicine, and not following up the patient in these eye injuries, I have found to have been of little value. The great danger lies not in what the physician does or does not do, but in what the patient does or does not do, after he leaves the physician.

The third thought is the proper estimate on the part of the employer of the value of his workers' sight, as shown by his providing proper hygienic and light conditions in his plant.

The fourth is the proper supervision of home conditions, and the proper evaluation on the part of the injured and his family of his life and limb and sight.

As I see it, there are three causes of danger to vision: bad light, disease, and injury. Over the first, the man has no control; and it is merely a question of education of the employers of labor. The question of lighting, I shall not discuss; because I believe that Dr. Black is going to talk about it. Disease prophylaxis (that is, the prevention of the entrance of men into industry who will thereby have their sight impaired), proper physical examination, the proper putting of men in jobs, proper prevention of contagious diseases,—are all very essential.

Contagious diseases are not so great a menace today, as they used to be. I remember, fifteen years ago, four serious epidemics in the factory districts of Baltimore from allowing cases of trachoma to come in and use the common towel and wash basin. In one factory alone, we had 150 cases of trachoma. The adequate care of the eye when diseased includes as I said, not only the use of drugs, but following up the patients to see that the remedies are properly used. The establishment of community clinics, where the service is large enough to attract capable clinicians, surgeons, and specialists, is very important. I myself started a clinic in Baltimore, which was supported by the manufacturers of that district. It was an eye hospital. In 1916, we had 4,000 patients. This hospital has been such a success that I was approached and asked to start another one of two thousand beds. The industries of that community agreed to build and maintain this hospital for the use of their employees and their families. I think that this will be a great step forward in that community in the care of the industrial accidents, the prevention of blindness, and the preservation of sight.

In this country, some time ago, three investigations were made of the causes of blindness; and it was found that 46% of 57,000 cases of blindness were due to preventable causes. Twenty-one per cent. of the 46% were due to industrial accidents. To prevent accidents, we must use protective means. The mere introduction of protective means, of course, is of little value, unless the employer and employee both appreciate the necessity of their use. Sir Arthur Pearson told me that in England, in six of the industries, they are required to use protective means for their eyes, and that it had succeeded within 24 months in reducing the eye injuries between 75 and 80 per cent. In these industries, the employer is obliged to supply the protection and the employee is obliged to use the protection. Both are held legally responsible. Now if it can be done in England, I believe that it can be done also in this country. The truth of the matter is, that in industry your largest job is to prevent accidents and prevent diseases; and with proper means at hand to do that, you will have solved a large part of your difficulty.

Dr. Nelson M. Black, Milwaukee: Ladies and Gentlemen: I did not know what the subject of Dr. Blair's paper was to be, so I brought a brochure prepared by me in 1916 for the Industrial Commission of Wisconsin. It strikes me that some of the suggestions contained therein are pertinent to the subject Dr. Blair has brought up. He has taken up the kinds of eye injuries, the first aid and the after treatment. One subject which he did not take up is accidents in which the eye itself is a factor.

Accidents in which the eye is a factor, must be divided into the following subheadings, and it will be noted that the first three subdivisions apply to accidents of all kinds:

(a) Carelessness,

(b) Familiarity with work,
(c) Dullness, lack of alertness, or stupidity,
(d) Poor vision,
(e) Poor lighting,
(f) Poor sanitary conditions.

If the actual cause of all the accidents occurring daily in the factories, mills, and various fields of labor all over the United States could be truthfully determined, fully one-half would be found to be the result of carelessness, familiarity, and dulled mentality, or stupidity.

As a rule, the man who is careless will not see that the machine with which he is working is in perfect order, or that the tools he is working with are what they should be, and will neglect to use the means of protection against injury furnished him by his employers before starting on a piece of work. As a result he receives an injury. Where does the blame lie?

There is a right way and a wrong way of doing every piece of work. The right way may take a little longer than the wrong way, but in the right way lies safety. There is an old saying "familiarity breeds contempt," and that saying applies right here. For instance, in the case of operating lathes or drills—in fact any of the equipment of a shop—there are certain instructions which have been worked out by the men who have designed these machines in order that they may be operated with safety. A man may begin work, and follow the instructions absolutely until he becomes familiar with their operation, and then have a contempt for the instructions and put his hand or foot in a dangerous place contrary to instructions. Having done the thing for so long a time, he thinks there is no danger for him, and he does it just once too often, with a maimed hand, arm, foot or leg, the loss of an eye, or even the loss of his life, as a result.

Dullness or actual stupidity may be a natural characteristic of an individual and in such case that individual should not be employed where his lack of brains would endanger himself or others. Dullness in that sense is not referred to in this discussion; slow thinking or a brain that is not alert, one that is dulled by late hours together with drinking and carousing, and the resulting loss of sleep, is what is meant. This is not intended to be a temperance lecture, but it is an accepted fact that a man who is rested by a good night's sleep and whose brain is not befuddled with liquor can look out for himself far better than the one who has to think two or three times before deciding what is best to do, especially in an emergency.

To come to the real subject of this discussion, poor vision or inability to see well may be a factor in causing general accidents because a man with poor vision cannot see the details of his work or the parts of the machine he is working with sufficiently well to protect himself against injury. Again, his sight may be so poor that he cannot see to get about a shop without running into objects or machinery in motion which might cause an injury, especially if the general lighting is poor. It may be said, of course, that such a man should not be employed in such a place. That is true enough, and such would not be the case if every man who applies for a job had to submit to a physical and visual examination as one must before enlisting in the army or navy, or when applying for a position in railroad or street car service.

The necessity for the physical examination of individuals, male or female, applying for positions in any manufacturing establishments, will be apparent upon a little thought. For instance, no manufacturer, factory superintendent, or foreman would accept or install a machine without inspecting it to see if it were complete in every detail and in good working order. Every employee is a part of the whole working machine of the factory, and any defect in any one part affects the whole. For example, a person with one-fourth, one-third, or even one-half of standard vision can not be considered as competent a workman as one with standard vision. Again, one may have standard vision according to the test but may have far-sighted or astigmatic eyes. The use of the eyes for detail work for long periods under such conditions causes eye-strain which results in pain and discomfort in the eyes, and in headaches, and thus interferes with the efficiency of the individual.

In a very large proportion of the cases of poor sight, properly fitted glasses will correct the vision, and if a rule existed requiring physical examinations as suggested above, men with poor vision would find out their difficulty when applying for a position and would, if possible, have their sight improved by glasses. This would prevent many accidents, as well as relieve the individual from eye-strain and headaches, and also enable him to do his work much better and more easily. In many cases the glasses would be a protection against eye injuries. Another factor that should be kept in mind while speaking of eye examinations for applicants for a position, is the payment of indemnity for loss of vision in case of accident to the eye. If there were a record of the man's vision made at the time he was employed, and through an accident he lost one-half or all of the vision of an eye, the basis of settlement would at once be determined, without the man's having to pay a lawyer to fight his employers and try to prove he had perfect vision before the accident.

Factories and shops should be well lighted for a number of reasons. First, poor lighting injures the eyes. Second, accidents are much less likely to occur. The maximum number of accidents occur during the time in which artificial light is used. Third, poor lighting detracts from the earning capacity of the workmen and is an extravagance. Good lighting is economical: superior work can be accomplished, vision is preserved; health is correspondingly better; and the factory output increased by from eight to fifteen per cent.

As regards the immediate effect of lighting on output, the Industrial Commission of Wisconsin found that a steel plant just by changing its system of lighting could increase its output at night by over 10 per cent. Regarding immediate effect of lighting on accidents, the National Electric Light Association has published a diagram correlating the monthly proportion of darkness, cloudiness, and sunlight in the city of New York with the monthly fatal accidents in 80,000 industrial plants for three years. In each "correlate" the maximum is around January and the minimum around July. Similarly the accidents per man are higher at night than by day. To a certain extent, artificial or weak lighting may increase accidents by fatiguing the eyes and attention, and hence lighting is included under the conditions of factory hygiene likely to influence fatigue. To a large extent, however, the relation of accidents and lighting is immediate, the distribution of accidents over the day being influenced by the growing objective invisibility of danger points.

Poor sanitary conditions, such as improperly ventilated shops cause the workmen to become drowsy and dull, to lack the attention required to do good work, and the alertness necessary to prevent accidents.

The latest research has resolved different degrees of ventilation as simply different degrees of heat and moisture combined. To quote Professor Lee:

"Much experimentation has shown that the evil results of confinement in improperly ventilated rooms are caused not by the presence of poisonous products of respiration, but by the heat and the moisture combined. When the air of the chamber was put into motion the temperature of the skin fell, the unpleasant symptoms disappeared very quickly, and the subject felt as if fresh air had been supplied. When the subject had been confined for a considerable time and the symptoms had become well developed, the breathing of pure air through a tube passing from the subject's face through the wall of the chamber to the outside brought no relief.''

We should, therefore, concentrate our attention on the effect of temperature and humidity.

Authorities are quoted, in regard to various classes of workers, to show that a warm and moist atmosphere naturally causes lessened activity of nervous and muscular structures; and that activity, enforced in spite of the desire for rest, causes an amount of fatigue disproportionate to the amount of work performed. Exertion begins to be accompanied by depression with a wet bulb temperature of 77° F.; and a dry bulb temperature of 86° F., together with a saturated atmosphere, causes enervation and exhaustion.

Prevention of Eye Injuries

A large proportion of general industrial accidents, particularly eye injuries, would not occur if more care were observed in following the rules, regulations and instructions that govern each individual operation in every shop, mill and factory. These should be posted in plain sight and be printed in several languages and when a man is set to work at any job, the foreman should make him read them.

As employers are required by law to furnish necessary and adequate protective measures and post instructions, it is equally incumbent upon the employees to cooperate and use these protective means according to regulations. Many workmen deem this cooperation by employees unnecessary. They seem to think that the protective means and instructions are put there to make their work harder. In order to enforce such cooperation the Industrial Commission of this state found it necesasry to issue an order reducing the compensation due a workman fifteen per cent in case of an accident, if it can be proved that the available means of protection were not used.

Preventing dust from getting into the eye is a hard problem, only to be solved by the use of goggles which have that portion between the lenses and the face enclosed with a mesh fine enough to keep out dust. This is impractical in most instances, because there is little or no ventilation about the eye and the glass soon becomes fogged from the heat and moisture radiating from the eyes and skin, and interferes with vision.

The only industries where such goggles are absolutely necessary are those in which the amount of dust is so great that it is impossible to see without some such protection, such as the sand blasting of castings, or like occupations. In this work it is equally necessary to prevent breathing the dust, so as a rule, a mask covering the entire face is used.

Dirt is usually carried into the eyes by rubbing the lids with dirty fingers or handkerchiefs, or is deposited between the lids by the wind, or blown in by fans. The greatest danger from dust or dirt is from the germs that may be carried into the eyes where, with the heat and moisture found there, they have an ideal place in which to breed. The dust or dirt itself is a source of irritation which quickly disappears on washing out the offending material, but such washing out will not always remove the germs.

Some varieties of germs set up an acute inflammation of the eyes which may result in loss of vision or of the eye itself; others only cause some congestion and make the eyes feel uncomfortable. One of the most frequent sources of eye infections in industries is the attempt to remove a foreign body from the eye by one who knows nothing about the proper method of doing such a thing, and who uses the corner of a dirty handkerchief, the point of a dirty knife blade, the chewed end of a match or tooth-pick, or some similar object. The man who has something in his eye is unable to hold it still because of the pain, and the man trying to remove it keeps jabbing at the eye until he has removed the object or the injured one can stand it no longer, with the result that the outer skin of the eye ball is scraped off, making a fine place for the breeding of the germs that may already be in the eye or that are carried in by the scraping. A badly inflamed eye, or an ulcer, may result.

The only means of protection against emery particles is the use of protective goggles, and they should be screened goggles, as the emery particles frequently strike against the face and bound from there, striking the rear surface of the unscreened lenses, and glance into the eye. This is shown by the number of particles welded to the rear surface of the lenses of unscreened goggles.

Goggles for workers at emery wheels and for protection against iron and steel scales do not have to be heavy affairs, as the force of the flying particles is not sufficient to break ordinary thin glass. Such is not the case with men who are doing chipping; here the glass must be thick and strong enough to resist a hard blow from a good sized piece of metal flying with tremendous force. Such goggles should be used by men working at drills, presses, punches, stamping machines, and lathes.

Protection against the molten metal is a hard proposition for the reason that the men are working in a hot atmosphere and perspiring freely, and almost any form of goggle quickly becomes steamy and fogged and interferes with vision. Isinglass goggles have been tried but have not proved very satisfactory. Some sort of goggle is necessary, however, for adequate protection.

Burns from acids and alkalies can be prevented, as a rule, by wearing glasses of almost any kind.

Injuries from flying glass or corks in bottling works may be prevented by using protective goggles.

The problem of eye protection in industrial processes involving high temperature and intense light which contains excessive amounts of ultra-violet light, must be considered from two standpoints.

Exposure of the unprotected eyes to very intense light sources, rich in ultra-violet rays, produces photophthalmia, an acute and painful inflammation of the outer coats of the eyes. Long continued or frequent short exposures to ultra-violet radiation of moderate intensity may result in severe inflammation by its cumulative action. Instantaneous exposure from electric flashes due to a short circuit in high voltage currents frequently causes a very severe inflammation. Many instances of lasting and even permanent injury to the eyes have been reported from comparatively short exposure to very intense light. Some of the occupations in which danger from intense light is incurred are oxy acetylene welding, arc welding, glass blowing, furnace tending, and arc experimenting.

The ultra-violet radiation which produces irritation and severe inflammation must be screened from the eye. The intense light must be reduced to a safe brightness to prevent the glare effects which markedly interfere with vision. This must be accomplished without reducing the ability of the eye to distinguish details.

Until recently, in case of apparent need for protection against intense light, an individual has selected a glass which has met his personal preference, this glass being accepted for use generally in that particular plant. In most instances no effort has been made to determine the danger to be guarded against or the absorptive properties of the glass selected.

Investigation of the properties of a number of colored glasses on the market by spectroscopic analysis has seemed to indicate conclusively that some of those heretofore reported to possess various desirable qualities are actually of but little more value as a protective measure for the use intended than clear glass. Ordinary clear spectacle glass affords some protection against the ultra-violet rays as it absorbs a small percentage of them. Smoked glasses show slightly more interference with the passage of the harmful rays than clear glass. Dark blue glass transmits more ultra-violet rays than clear glass of the same thickness. The irritating rays transmitted by such glass can be borne without danger for a few minutes but do cause decided irritation from their continued action. For prolonged exposure such protection is absolutely futile. It is therefore imperative, in order to insure safety, that a glass which absorbs with certainty all the ultra-violet rays be used when the eyes are exposed to light rich in these dangerous rays for more than a few minutes at a time.

Glass in which the color tends toward a yellow or yellowish green affords the greatest protection from the harmful rays. Such glass is found on the market under the name of amber, euphos, fieuzal, akopos, and noviol glass. Even this glass must have added to it, in the process of manufacture, a dark smoked tint to reduce the intensity of the glare in order that they may be used with comfort.

Deep red glass is an effective protection against dangerous light and is in general use in many industries. It is usually combined with yellow, blue, or green and blue glass. The objection to such a combination is the inability to distinguish details and to see to get about, also the increased weight caused by using two or more pieces of glass.

The protection against blindness from wood alcohol is a serious question. The only means of prevention is to avoid it absolutely. It must not be taken internally, applied to the surface of the body, or its fumes inhaled. Workers who have to use it must be in well ventilated rooms with a free circulation of air, and must be instructed as to the danger that may result from inhaling the fumes. All containers must be marked with skull and cross-bones and inscribed *"poison," "May cause blindness if drunk, applied, or inhaled."* Every state should pass stringent legislation requiring every article or substance containing wood alcohol to be labeled as above. In the meantime, it is the duty of superintendents, foremen, vocational teachers, and other enlightened individuals to obey the unwritten law. Intelligent and conscientious people need no legislative enactments for their guidance.

Protection against granulated lids and other eye infections can only be maintained by strict personal hygiene and sanitary surroundings. Individual towels and individual soap have become as imperative a necessity as individual drinking cups.

Fortunately in this portion of the United States granulated lids are rare, but that in no wise should keep one from observing the laws of personal hygiene.

The means of prevention of eye injuries can be fairly well summed up in a few words: *Safety First! Don't take a chance! Use every means provided to prevent accidents to yourself and others. Follow instructions, rules, and regulations. They are given you for a purpose.*

First Aid Equipment for Eye Injuries

The first aid equipment for eye injuries in factories, mills, and shops should consist, first of all, of an individual in charge who has good common sense, one who knows when he can attend to an injured eye safely, and when to let it alone and send the case to someone qualified to tend it, after he has applied a protective bandage for the main purpose of keeping the workman's dirty hands away from it. This is most important! Second, sterile solutions of saturated boric acid and normal salt should be on hand for flushing the eyes. A bulb syringe to use in flushing the eye is essential. A supply of sterile absorbant cotton and bandages, plenty of safety and ordinary pins, adhesive plaster one inch wide on spools, ordinary wood toothpicks and medicine droppers are a part of the equipment. As far as the medicine is concerned a fresh 10% solution of argyrol or some similar silver salt is a good thing to have on hand to drop in the eye after the removal of a foreign body, when the man can go back to work immediately. This solution spoils with age, however, and should be freshly made up every two or three weeks. A tube of bichloride of mercury salve of a strength 1-3000 is much better and does not deteriorate.

With the above equipment simple eye injuries can be taken care of in practically any industrial institution.

First Aid to Eye Injuries

The most important rule to learn in first aid work in eye injuries is to *keep the hands and any dirty object away from the eyes.*

Second, report immediately to the foreman or person in charge of the first aid department.

Don't go to your neighbor and ask him to help you out, no matter how skilled you may think he is, or he thinks he may be, in removing foreign bodies from the eyes. There is usually a man in every shop who is more or less expert in just such things, for the reason that he has heretofore had to do so much of it, but the First Aid Department has been established for the purpose of eradicating the evils of just such well meant service.

For the removal of dust and dirt, the lids should be gently separated and the eye flushed with a boric acid of normal salt solution, followed by a couple of drops of a 10% argyrol solution or the application of a small bead of Bichloride salve, bandaged, and the man sent to the company doctor. This rule also applies to any injuries in which the foreign body has imbedded itself in the eye or penetrated it.

All cases of penetrating injuries should be sent to the doctor. Frequently the injured man has so little discomfort and so little interference with vision, he will not even apply for First Aid, and if he does do so will refuse to go to the doctor. As a result, many eyes are lost which otherwise could have been saved. If the penetrating body is small, it is frequently impossible for the injured person to tell whether there is anything in the eye or not, and the ordinary means of examination used by a doctor may not be able to discover it. In such cases it is of the greatest importance to determine by means of the x-ray if there is a foreign body within the globe, for if foreign bodies are not removed they eventually destroy vision or cause loss of the eye.

By taking an x-ray picture with the patient facing the plate, and also a side view, the foreign body may be localized, and it may thus be determined whether the particle is in the eye or has passed clear through into the eye socket.

If the x-ray succeeds in locating the foreign body within the eye, an attempt is made to extract the piece if it is iron or steel, by means of a magnet through the opening it made in going into the eye; or if it is considered too dangerous to attempt removal in that way, a second opening is made in the eye-ball in a part less liable to produce injury, and the piece removed through this second opening.

The removal of a piece of metal by means of a magnet can only be accomplished when it is capable of magnetic attraction, and this is the reason why penetrating injuries from copper, brass, lead and many alloys are so much more dangerous than from iron or steel. There are also certain varieties of steel that contain a high per cent of manganese used in making highly tempered tools, which are are not sufficiently attracted by a magnet. In such cases it is often necessary to remove the eye-ball in order to save the other eye, as the irritation set up in the injured eye is frequently transferred to the good eye, causing it to go blind. The good eye may be affected at any time from a few weeks to thirty and forty years after the injury to the other eye. Thus the necessity of being sure there is no foreign body in the eye will be appreciated.

The advice commonly given for first aid in burns from acids is to use weak alkali solution, such as ammonia; and for lime burns weak acids, such as vinegar. This is bad advice and may work harm. The best treatment is to put the individual on his back and pour plenty of water between the well opened lids as quickly as possible. Then apply the bichloride salve if obtainable, bandage the eye, and send the patient to the doctor.

Burns from intense light do not make themselves manifest for several hours after the exposure. When they do so, the services of a physician should be sought at once. This advice applies to those suffering from loss of vision from wood alcohol, and to those having inflamed or infected eyes from other causes.

The three cardinal points in factory first aid in eye injuries may be summed up in three words:—*Cleanliness! non-interference! and protection!!!*

EVENING SESSION

After the dinner, which began at 7:30 P. M., a short business meeting was held.

Dr. Mock: Gentlemen, we have a little business to finish. My good friend, Dr. Crowder, next to me, who is the international lawyer of the Association, has called attention to the fact that it is unconstitutional to bring up the amendment tonight. The Constitution provides that notice may be given at this meeting that an amendment to the Constitution will be acted upon at the next annual meeting. One of the changes that we wished to make was in regard to the meeting place. That can very well go over until next year, but we do need to raise the dues at once. We can get around this constitutional point by passing a motion that an assessment of three dollars be made this year, and giving notice now that an amendment providing for an increase in the dues will be taken up at the next meeting.

It was moved and seconded that an assessment of three dollars per member be made.

Dr. Mock: You have heard the motion. Is there any discussion? If not, all those in favor of it will say "Aye"; those opposed, "No." It is carried.

It was moved and carried that the time and the place of our annual meeting should continue to be the same as that of the American Medical Association meeting.

PRIZE THESIS

WAR METHODS IN PEACE INDUSTRY

How Our Army's Health Program May Be Utilized In Civil Occupations

By Lieut. T. T. Crooks

It is a well-known fact that both Capital and Organized Labor have been woefully short-sighted in the matter of the medical attention of the working people. During the past fifty years rapid strides have been made in Industrial Hygiene. A number of the so-called hazardous occupations have been required by legislation to take certain steps for the protection of their workers. Some notable examples are the requirements for white phosphorous in the match industry, the various screens, suction devices and gas masks provided in the dusty trades, and the improved lighting facilities, both daylight and artificial, in many of the up-to-date factories. Employers have slowly realized that such expenditures were in the end financial gains because of the better and longer services rendered by the employees.

During the past decade, there was started in the eastern part of the United States an organization known as the "Life Extension Institute." Its object was to introduce medical examinations of employees into all large factories and industrial centers. It went one step further than Industrial Hygiene, and sought to point out that there was often great economic loss, both to employer and employee, in occupations not generally classed as hazardous. The main sources of waste may be grouped under three headings:

1. Often times a laborer may be able to perform his given task well enough to escape the "whip" of dismissal and yet harbor some physical disability which cuts down his highest efficiency. An early medical examination may detect this condition in time, not only to avert a complete breakdown, but also to suggest a change of work, or to instruct him how to remedy the trouble in its incipient stage. Such a procedure will both increase the man's

efficiency and prolong his services to his employer. Both of these factors are paramount from a financial standpoint.

2. It is not at all uncommon for some infectious disease to spread rapidly throughout a whole group of workers from a single focus. It is obvious, without further comment, that the prompt detection and removal of any such case by a medical attendant is of the utmost importance to both the employer and the employee.

3. In a certain Indiana manufacturing city, an enterprising medical man observed that most of the factory accidents occurred among men who had cause for worry or extra work in their homes. For example: A mill man whose wife is ill, has to act both as nurse and house-maid, after working hours. He fails to get his normal and needed rest. The next day he is just a trifle more nervous or less dextrous in his movements and gets entangled in some part of the machinery, receiving a serious or fatal injury. This fact was called to the attention of the employer, who after some careful investigation, found that the majority of accidents did occur under circumstances similar to that above described. This physician suggested that it would be to the employer's financial advantage to care for the families of the employees. For a stated sum, hospital care was provided for the workers' families at the expense of the firm. The final result was not only an increase in the workmen's efficiency but an actual financial saving to the company in liability and damage suits.

This Industrial Hospital scheme is an outgrowth of the Life Extension Institute, just as the latter was the product of the Industrial Hygiene Movement. In the above way the Life Extension Institute showed to employers that the medical examination of their employees not only increased the latter's present efficiency and length of service—thereby augmenting the organization's gross output—but also effected a marked decrease in expenditures under the Compensation Laws.

During the recent European War there has been developed a system of health conservation in the various armies such as the world has never before seen, and, heaven forbid, will ever again have cause for viewing, in such an undertaking. It is well known that in all previous wars, more deaths have been caused by disease than by bullets. Our own Spanish-American War might well be called a sanitary disgrace to our nation. The typhoid and dysentery toll in soldiers' lives was something appalling in the light of our present knowledge. But when the United States entered the recent European conflict, she seemed determined to keep up the health efficiency of her army. Under the able leadership of that greatest of modern sanitarians, General Gorgas, the medical profession of our country organized for combat. In its lists were included the choice of our medical and sanitary experts. The Medical Corps was called upon to do all in its power to put into the field and maintain in the highest state of physical fitness, the greatest army ever raised within our borders. The whole effort might be looked upon as a magnificent laboratory demonstration before the world of just what could be accomplished by united effort in health efficiency. The result cannot but appeal to even the laity, and its effect will be felt for many years even though there is no follow-up campaign. The sanitary training given to the 4,000,000 or more of our best young men will not be forgotten for decades after their demobilization.

It has been my duty, as well as privilege, to watch the results of this work for the past six months in a Base Laboratory in the Service of Supplies Area of France. Here the conditions are similar to those met with in a large manufacturing center. There are car construction camps, stevedores, remount stations, etc. From this vantage point, it is the object of this paper to call attention to some of the Army methods for the preservation of health and to show how they may be applied in our industrial centers, not only for the benefit of the workers themselves but also for the financial gain of the employers.

1. In the first place the Army realized that its task was one of severe and sustained work. It therefore called on the Medical Corps to select for its fighting units, only those whose age and physique would enable them to endure the arduous duties required. It started on its work, therefore, with those who by nature were capable of withstanding the strain.

Such a procedure in civil life would obviously throw out of the labor market a large number of physically unfit, and thereby glut our charitable institutions. It is not suggested that these unfortunates be forbidden to work, but rather that they be directed into occupations suited to their physical abilities. A skilled medical adviser for all industrial concerns could do much toward adjusting these conditions. A man with weak lungs should be kept out of a dusty trade and a pregnant woman should not be engaged in work which will endanger her offspring. The DuPont Powder Company already requires a monthly medical examination of all of its female workers to avoid any injury of the latter sort. By such a system of selection, many premature health collapses could be averted, and at the same time the individual efficiency and length of active service for the company increased.

2. After the Army had secured its quota of physically fit men, the Medical Corps set about keeping them in the best of trim. This was accomplished in a number of ways:

A. In the first place, the Army realized that among its selected troops there were many, who from their previous work, were unaccustomed to the strenuous physical exertions required. It, therefore, set about to harden them by a system of physical training. Setting up exercises, drills, marches, practice battles, etc., in a graduated form were introduced. Owing to the speed required, these were sometimes overdone and some men, who were physically sound, were broken down. But regardless of these mistakes, the intention of well doing was there. How many industrial concerns are there that ever think of attempting any graduated form of development for their employees? A number of them maintain a recreation center and may support various athletic teams for competitive and advertising purposes. A general and graduated form of physical training would by most labor directors be called ridiculous; and yet in many strenuous occupations, such a program would be both a time and money saver in the end.

B. The Medical Corps was again called upon to maintain the Army's health by lectures and demonstrations to the troops on sanitary matters. The soldiers were taught the danger of promiscuous spitting, coughing, sneezing, and loud talking. Few Labor Magnates ever call the attention of their employees to such matters excepting from an aesthetic standpoint. And yet we all realize that most of the respiratory diseases are communicated by the nose and mouth excretions. An hour or so of working time each week in a large factory could well be devoted to such instruction by a competent medical man. The net saving in illness and loss of time would probably startle the majority of capitalists.

C. The Army does not stop with the mere perfunctory giving out of advice on such subjects. Each organization has its own Sanitary Officer, who personally inspects the whole camp daily, and reports all defects to the Commanding Officer. To facilitate this work and to indicate concrete points to be observed, a form similar to the enclosed copy may be used to advantage. A competent physician could easily adapt such a form to the local requirements and then assign the daily inspection to any bright, intelligent employee. Such a plan could be very profitably adopted in the majority of factories. Aside from the immediate correction of sanitary defects, the psychological effect on the workers would be marked. Each man would soon become just a little more careful in his sanitary habits, both at work and at home. This constant care would quickly develop a spirit of pride among the workers in the cleanliness of the institution. When this point is reached a long stride in the interests of Preventive Medicine will have been made.

D. The next method for maintaining the health of the Army is to keep the medical officer constantly in touch with each unit—both as an adviser for new movements and as an attendant for those disabled. As soon as a soldier is found to be ill in any way, he is given immediate medical attention. It is the aim of the Army to return to active duty in the shortest time possible any of its disabled soldiers. For this purpose, the best equipped hospitals and medical staffs obtainable are kept always on hand.

The usual method in a factory is to allow an unfit employee to worry along at his work as long as he is able and then to secure whatever medical attention he may feel able to afford. A large industrial center could greatly increase its output if each disabled unit were immediately given the best medical attention and returned to active work in the shortest time possible.

3. The next great effort of the Army was to develop as much immunity to disease in its units as modern science was able to provide. It, therefore, ordered all of its soldiers to be artificially protected against such diseases as the medical profession had shown to be subject to prophylactic control. Thus small-pox and the typhoid fevers, which have been the scourge of all armies since the beginning of history, have practically been eliminated from the present and greatest of all armies, by means of improved sanitation and vaccination. The Army Medical School alone, in 1918, prepared 18 million doses of typhoid vaccine, at a cost to the Government of over $900,000. Such an expenditure is found to be real economy in the end.

In the majority of cities, vaccination is left to the municipal authorities, who are powerless to act unless public opinion is behind them. After the Army's very successful demonstration of the efficiency of these two vaccines, every large organization would find it to their financial advantage to require and provide small-pox and typhoid vaccinations for all of their employees.

Along this same line may be mentioned the Pneumonia Vaccine. While the efficacy of this inoculation was not sufficiently demonstrated before the war to order its administration to all troops, yet during the war by voluntary trial, its protective power has been shown beyond the shadow of a doubt. Not only does the vaccine afford marked protection against pneumonia but it is also very efficient in clearing up a number of old sinus and catarrhal infections.

Each winter this disease claims its high toll of victims in our population, until now it has displaced tuberculosis from its place at the top of the ten "Best Killers." Every industrial center fully appreciates its loss in time and workers from this cause. And even though the protection afforded by this vaccine is not yet so great as that afforded by the small-pox and typhoid vaccines, still the promise of complete success is great, and every industrial center within our territorial limits should take all steps possible to provide protection for their workers against this modern scourge.

Another protective agency required by the Army in France is the administration of Tetanus Anti-toxin to all wounded soldiers. While it is recognized that the highly fertilized fields of France contain more of the Tetanus organisms than do the most of our factory floors and machinery, yet the benefit of the doubt could well be given to all injured workmen and a protection against the dreaded "lock-jaw" provided.

Another protective development of this war is the Anti-Gas Gangrene Serum of our Rockefeller Foundation and the French Pasteur Institute. In deep and contused wounds where the Welch bacilli and its allies are apt to cause trouble, a single dose of this serum has been shown to afford great protective and curative powers.

4. The Army has found it profitable to carefully supervise the food of its soldiers. Not only is the best possible food provided but a staff of food experts is employed to see that the proper amount and balance is maintained.

It is not suggested that our large industrial organizations take over the complete handling of the commissary for their employees and families. Such a plan would be neither practicable nor desirable. A few of our most advanced factories have found it best to provide good lunches at cost for their workers. But it is feasible to employ a few good food experts to instruct and demonstrate in the homes of the workers. Many of the wives of our laboring men have little or no idea of what a proper meal is. Their only guide is bulk and the purse which provides it. A few good lessons by a tactful food expert could do much in helping these women in buying and cooking wisely, and thereby increase the efficiency of the men on whom they depend.

5. It hardly seems necessary to call attention to as well-known a subject as water and water supply. But so important does the Army consider its drinking supply that a special corps is given sole charge of this work and any soldier using an unofficial water supply is subject to disciplinary action. I personally know of several large factories which keep on their payroll an expert on water sanitation. So many human ills are due to polluted drinking water that it behooves every large organization to give this feature special attention.

6. In ante-bellum days the American armed forces held the top position in venereal diseases. She outstripped her nearest rival, Russia, by a three to one ratio. So much loss in efficiency did this entail, that a detemined stand against the venereal disease peril was made in the present war. First, the men were taught by lectures and pictures the dangers of venereal infections. Next a system of prophylaxis was introduced which is 99.9' per cent efficient, when properly taken. Next the men contracting venereal diseases were subject to disciplinary action, and finally, all cases whether contracted before or during the war, were given the best known treatment, so that there will be returned.to civil life a group of men as nearly clean as is possible.

Due to the extreme delicacy of the American public on this subject it is difficult to secure any definite venereal rate in the civilian population. Some authorities estimate that fully 75 per cent of our colored population have or have had some venereal infection; other investigators claim that syphilis kills more people than any other disease. Be that as it may, the medical profession well recognizes that there is an enormous economic loss, to say nothing of the misery and ill health, often times among innocent victims, from the venereal diseases. If the Army, which at best is seeking its own efficiency rather than the welfare of the individual soldier, finds it expedient to take such great cognizance of these social diseases, surely our great industrial organizations, whose workers are in constant daily contact with ourselves and our families, should institute some steps to check this great blot on our boasted civilization. If for no other reason, it is to the advantage of our capitalists to see that their workers raise up a strong, able generation, on whom they can depend to carry out their dreams and accomplishments of the future. The cost of venereal instruction, inspection and treatment by the best physicians obtainable would be infinitesimal compared to the economic saving in this and the coming generations.

7. Another way in which the Army has blazed the trail in health conservation, and which our country has already taken up, is the abolition of alcohol. Even before the present war, the Army canteens were dry, and during the war, both as a matter of conservation of food stuffs and the increasing of efficiency, practically all countries have taken up a more or less modified form of prohibition. If so heartless an organization as the Army finds it best to abolish alcohol, surely in a labor organization, where speed and efficiency are the key-notes, the drink habit should be discouraged.

8. A final lesson which the Army learned from sad experience is the baneful effects of overcrowding. Seventy-seven per cent of the deaths from disease in the recent army were caused by six respiratory diseases. Eighty per cent of these fatalities were due to pneumonia and fifteen per cent to cerebro-spinal meningitis. It is now generally admitted that there is a direct ratio between the incidence of these respiratory diseases and the number of square feet occupied by each soldier. Definite experiments with chronic carriers of the Meningococcus have shown that the carrier rate among these men dropped from 29 per cent to 4½ per cent in seven weeks by the simple means of increasing the space between beds by 2½ feet.

The unusually high incidence of influenza during the recent pandemic has taught us that even with all of our modern scientific and sanitary methods, it is still possible for a single epidemic to encircle the globe in a few short months, claiming millions of lives as its toll, in a manner similar to the plagues of olden times. This disease, with the others of its kind, is transmitted by direct contact. When the infections of this war moved from below to above the diaphragm, there was placed on us new demands in the matter of relieving overcrowding. In the Army, this is an extremely difficult problem owing to the need of grouping large bodies of men for great concerted movements. The regulations requiring more space and head to foot sleeping have done much in controlling these diseases, and with the knowledge now at hand, the Army will in all probability still further increase the number of square feet allotted to each soldier.

In the industrial world, also, space is the most expensive and difficult feature to handle. Every industrial plant within our confines has experienced the handicaps and financial losses incident to unfilled and delayed filling of orders, due to a loss of personnel in the recent epidemic of influenza. It is very probable that they will all welcome any suggestion for the warding off of a repetition of this scourge and that they will gladly do all in their power to increase the space between their employees.

By these various means, those in charge of the greatest and best army our country has ever essayed, have attempted to conserve the health of its soldiers. The results have been most gratifying and have even surpassed the expectations of the most optimistic. The armed force of any nation is nothing more than an enormous industrial plant, whose aim and purpose is to preserve and construct those most vital products of Peace and Liberty. Despite its sacred mission, as an organization, an army is the most heartless and unfeeling in its construction, of any organization known. If this self-centered being finds it expedient to go to such lengths to preserve the health of its individual units, surely our domestic labor centers, with which we are in constant contact and on whom we depend for our daily bread, should take some cognizance of these lessons in the matter of health efficiency.

So far these suggestions have been made solely from the financial standpoint. On the humanitarian side, there is no known means of measuring or even estimating the increased happiness, pleasure, and comfort resulting from such plan of health protection. I believe that a well man is a happy man. When this great army of ours is demobilized there will be released into our various communities a body of young men, over four million strong, who have experienced the helpful influence of the Army's health program. While it will be impossible to inaugurate all of these things instantly, still the Army has shown the way and with this group of the nation's best young men for a nucleus, the medical profession should not lose the opportunity to make an immediate appeal to the great captains of industry for assistance and co-operation in the largest plan of health conservation and preventive medicine yet conceived in the mind of man.

Already under the auspices of the Red Cross, the scientific leaders of the world have assembled at Cannes, France, for the consideration of a League of Nations for the Preservation of the Public Health. As a practical demonstration that this great philanthropic organization is serious in its welfare work is the formation of reserve emergency Red Cross outfits in many of our large cities and industrial centers for the handling of infectious outbreaks and great accident cases, which are beyond the normal capacities of the local authorities.

In the era of commercial competition which will surely follow this war, the nation whose labor leaders first grasp the importance of preserving the lives of the working people will inevitably win out in the race. When employer and employee can take a friendly and personal interest in the health, one of the other; when the tyrannical methods of the former and the sometimes Bolshevistic spirit of the latter, under the mollifying influence of medical supervision, fade into peaceful interest in each other's welfare, and the two can meet on the mutual ground of a sincere desire for an improvement in each others physical well-being, to the end that each will be benefited in the contest for the world's commercial supremacy—then and then only, will Industrial Medicine have advanced the labor problem to a point where the major part of industrial controversies will be at an end, and we can see our commercial enterprises taking their rightful place at the head of the world's producers.

Copy of Sanitary Report as used at Camp Hospital No. 39, A. E. F. As prepared by Lieut. T. T. Crooks, Sanitary Corps, U. S. A.

Daily Sanitary Report for..............................191....

Kitchen and Mess

1. Is food clean and kept covered?............Is ice box clean?............
2. Are garbage cans and area around mess hall well policed?........
3. Is cook clean?...............Hands clean?...............Assistants?............
4. Are kitchen table and utensils clean?...............Towels?..............
5. Are tables scrubbed and mess hall clean?....................................

Latrines

6. Policing adequate?............................Seats clean?..........................
7. Are vaults fly-proof?............Is general condition good?..............

Hospital Grounds

8. Are they well policed?..
9. Are cuspidors and trash cans provided and used?.....................

Wards and Quarters

10. Are they clean?.....................Sweeping dry or wet?....................
11. Is ventilation good: Day?........Night?........Temperature?..........
12. Are masks worn in wards containing respiratory infections, by Ward Surgeons?............................Nurses?.............................. Attendants?.................................... Patients?................................
13. Are night urinal cans provided?............Emptied daily?............
14. Are quarters and personnel free from vermin?..........................

Water

15. Is supply adequate for drinking?................Washing?..................
16. Are Lyster bags kept clean?........................Filled?..........................
17. Are individual drinking cups used?...

Remarks and Recommendations

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Officer of the Day.

Mercy Hospital Staff Library